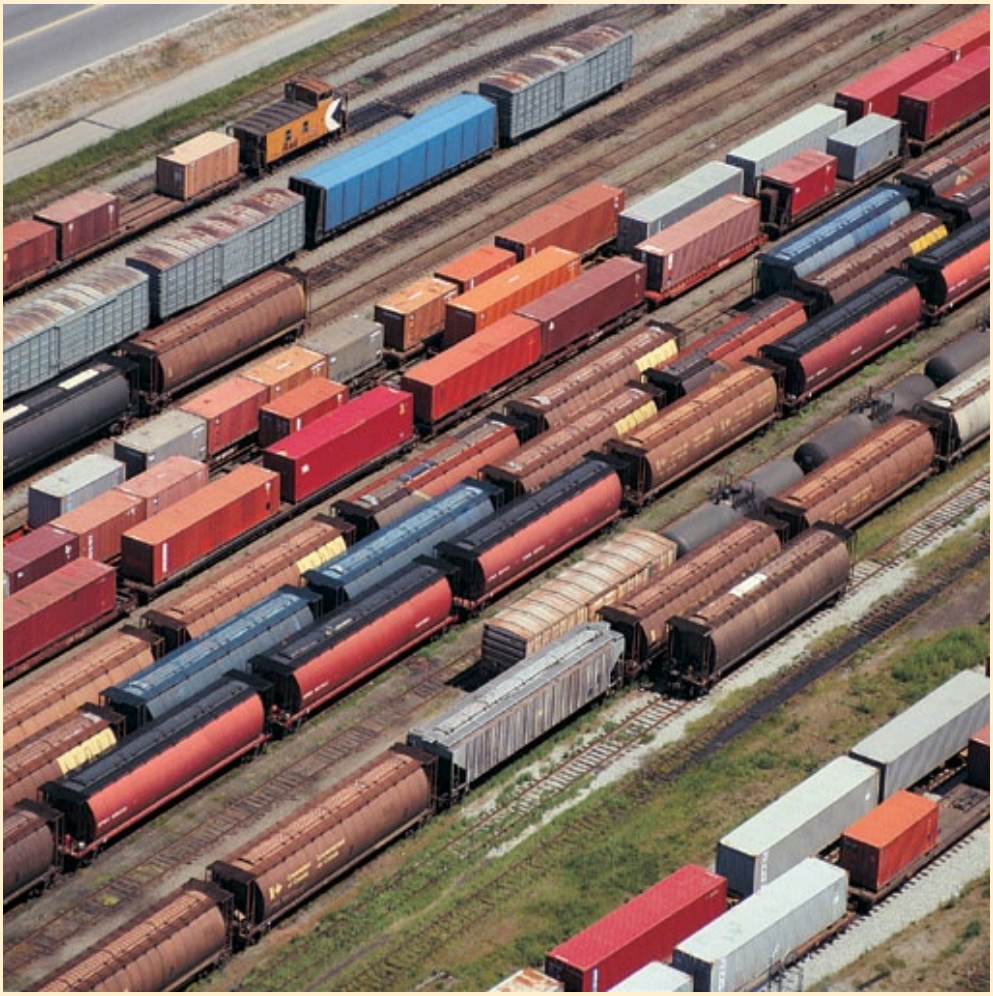
European Foundation for the Improvement of Living and Working Conditions

From national to sectoral industrial relations: Developments in sectoral industrial relations in the EU



From national to sectoral industrial relations: Developments in sectoral industrial relations in the EU

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Research project: National industrial relations systems in the EU: Country-specific and sector-specific properties

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Foreword

The sector is still a major level of national social dialogue in most EU countries, and it is emerging as a key level of governance at the European level. This study looks at industrial relations at sectoral level, and aims to show that they develop similar characteristics across national borders. It is based on research covering nine sectors in all the 27 EU Member States and uses Eurofound representativeness studies and country profiles as main references.

This research allows the authors to conclude, for the first time, that industrial relations tend to vary more by sector than by country, and consequently demonstrates a strong reason why more attention should be paid to industrial relations at the sectoral level. It also suggests a link between developments in European sectoral social dialogue (ESSD) and sectoral industrial relations structures in the Member States.

By analysing the assembled data, the authors of this study were able to test whether the types of industrial relations systems at the sector level resemble the established national ones. In this way, they have been able to propose a reclassification of industrial relations models in the EU by sector, and to show how they differ from national types.

The study also attempts to identify, for the first time, distinctive 'types' of industrial relations regimes at sector level, which, the authors argue, provide a more detailed picture of European industrial relations than the more abstract, and sector-insensitive, national definitions allow.

Industrial relations systems, in a national context, have been studied for more than 100 years. However, the study of sectoral industrial relations at an international level is taking only its first steps. This study makes a strong case for the European sectoral level as a new dimension for the understanding of industrial relations.

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Country codes

EU15 Member States prior to enlargement in 2004 (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the UK)

NMS 12 New Member States, 10 of which joined the EU in 2004 (Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia) and the remaining two in 2007 (Bulgaria and Romania)

EU27 27 EU Member States

EU27

AT	Austria
BE	Belgium
BG	Bulgaria
CY	Cyprus
CZ	Czech Republic
DK	Denmark
EE	Estonia
FI	Finland
FR	France
DE	Germany
EL	Greece
HU	Hungary
IE	Ireland
IT	Italy
LV	Latvia
LT	Lithuania
LU	Luxembourg
MT	Malta
NL	Netherlands
PL	Poland
PT	Portugal
RO	Romania
SK	Slovakia
SI	Slovenia
ES	Spain
SE	Sweden
UK	United Kingdom

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Executive summary

Introduction

The differences between industrial relations in specific countries have long been studied, but there is growing interest in the similarities between the same sectors across different countries.

This study, focusing on industrial relations in nine sectors across the 27 EU Member States, aims to highlight the potential for comparing sectoral industrial relations, and to show that it tends to develop similar characteristics across national borders. It highlights factors that may explain different degrees of international convergence in different sectors, and therefore the potential for EU-level coordination in each sector.

The study looks at the position of the sector within emerging European multi-level governance. It also questions how industrial relations configurations at sector level may interact with sectoral governance at the EU level. In particular, it suggests, after reviewing available information, a link between European sectoral social dialogue (ESSD) developments and sectoral industrial relations structures in the EU Member States.

The sector has been promoted as a specific level of European social dialogue and a core element of the European social model, with the establishment of sectoral social dialogue committees, which have produced more than 500 joint texts since 1998.

The study argues that, because the sector is a prominent level between the European, national and company levels, its organisation and cross-border similarity affects the capacity to develop and implement ESSD. An initial review of the production of agreements and texts across the nine countries indicates that this is the case, even though the specific causes and effects will require more in-depth investigation, possibly across a larger number of sectors.

The study is conducted in three interrelated steps.

- It investigates the variability of sectoral industrial relations regimes by country, as well as the variability of national industrial relations regimes by sector, to test whether economically internationalised sectors display more comparable industrial relations regimes across the EU.
- Through cluster analysis, it describes and analyses industrial relations regimes at the sector level, elaborating a new classification of industrial relations regimes.
- It develops a qualitative investigation on the relationship between sectoral industrial relations regime similarity and the ESSD output.

Policy context

The sector is still the main level of collective bargaining and of social partner organisation in about half the EU Member States. There has been growing pressure to decentralise national industrial relations, but it is still not clear whether this may, in part, be compensated for by developing cross-border coordination. This could occur within multinational companies, in collective bargaining rounds, and at EU level. The EU has been developing a framework for ESSD since 1998, creating 40 European social dialogue committees covering about 145 million workers throughout the Member States. The sector is still a major level of national social dialogue in most Member States, and it is emerging as a key level of governance at European level. Understanding the sectoral dynamics of social dialogue is therefore increasingly relevant for comparing national developments and for understanding trends in European governance.

Key findings

Differences and similarities in industrial relations

The study shows that some countries have similar industrial relations regimes across all economic sectors, some countries have very different industrial relations regimes from sector to sector, and some sectors have similar regimes regardless of which country they are in. The level of sectoral variation does not appear to be related to different traditional 'types' of national industrial relations, except for the Nordic countries, which all display low variation. Countries that have similar industrial relations regimes across sectors include states as different as Finland, Malta and France. However, Poland, Cyprus and Portugal have the most dissimilar industrial relations regimes across their sectors. The telecommunications sector has the greatest similarity across all EU27 countries, and the sector for hairdressing and beauty treatments the least. Industrial relations configurations vary more by sector than by country. This means that the differences across sectors within countries tend to be larger than those between countries within the same sector.

Push and pull factors of sectoral industrial relations similarity

The analysis of the determinants of cross-country industrial relations similarity showed that socioeconomic factors such as the internationalisation of sectors (for example, sectors that are exposed to international competition and have a high degree of transferability of production locations) are associated with similarities in industrial relations regimes across countries. Also, EU regulations can 'pull' sectors towards industrial relations similarity across countries, as well as foster 'push' factors, such as the internationalisation of sectors, and thus promote similarities of industrial relations structures.

Allocation of industrial relations systems among sectors

As industrial relations regimes vary both by country and by sector in the EU27, the study developed a system of industrial relations types, inspired by the existing classifications of national-level industrial relations models. These types take into account different industrial relations dimensions observed at sectoral level. Following the sectoral clustering, it appears that countries are positioned in terms of sectoral industrial relations types, in groups that are different from those they belong to according to the traditional industrial relations national regimes.

The consideration of sector variation for the identification of similar industrial relations types revealed that the distribution of industrial relations types does not follow 'ideal' geographic lines as national classifications do when distinguishing Nordic, southern or eastern European models. Again, the analysis found a difference in the spatial allocation of industrial relations types between sectors exposed to international competition (which tend to display similar industrial relations characteristics across the EU27), within one or two large groups, and unexposed sectors. This suggests that internationalisation produces a certain degree of convergence, if not necessarily towards one single industrial relations type. In the protected sectors, by contrast, geographic patterns resembling traditional national classifications are more visible, indicating that sectoral industrial relations systems correspond more closely to the various dominant national models.

Sectoral industrial relations regimes and social dialogue at EU level

This report highlights some sector characteristics of industrial relations that appear to affect, in a multi-level system, the governance capacity of ESSD. The analysis suggests that sectors with similar industrial relations across countries are associated with more ESSD output. Also, data suggest that certain industrial relations characteristics at the sector level may facilitate social dialogue at European sector level. In particular, low actor fragmentation, high organisation density and high levels of collective

bargaining are generally found in the sectors where ESSD appears, at least formally, to have been most productive, although the test of this association will require more research.

Policy pointers

- Given that sectors vary more than countries in their industrial relations specifics, the sector is a very promising level for studying European convergence of industrial relations and the potential for European social dialogue.
- EU regulations that stimulate the internationalisation of sectors appear to have a spillover effect on sectoral industrial relations patterns.
- The ESSD is more likely to develop and intensify in sectors with similar industrial relations across the EU Member States.
- Some sectors follow a sectoral pattern of industrial relations across borders and others have national patterns. Conversely, even countries characterised by decentralised or less coordinated industrial relations, such as most of the new Member States, display sectoral diversity and some of their sectors emerge as highly organised.

Introduction

Background and objectives

In Europe the sector level is a fundamental and long-standing arena for the governance of labour markets at both the national and EU level. Many trade unions and employer associations are organised and negotiate at sector level (Marginson, 2005). The sectoral governance of labour markets through social dialogue is also a key feature of Europe's social model (Kittel, 2002), as recognised by the European Union.

Attention is focusing on the apparent widening of the long-established sectoral differences in industrial relations regimes. In Germany, often considered as a typical 'integrated' economy, it has been questioned whether industrial relations in some of the more recently organised sectors, such as telecommunications, correspond to the German national model at all. It has been argued that industrial relations in German call centres more closely resemble those in America than other European countries (Batt et al, 2010). Sectoral shifts in employment, in turn, may lead to these differences transforming the whole German system (Lehndorff et al, 2009). However, such observations are not rooted in systematic comparisons of industrial relations across sectors and countries. There have been very few large-scale international comparisons of sectoral industrial relations, and those are mostly limited to high-profile sectors (in terms of their contribution to income, employment and/or trade) such as metalworking and telecommunications (Katz and Darbishire, 2000), banking (Regini et al, 1999) or, less typically, private services (Dølvik, 2001).

In this study, data on the most important industrial relations institutions are compared across nine sectors and 27 EU countries. This allows us to demonstrate, for the first time, that industrial relations tend to vary more by sector than by country. This provides a strong rationale for paying more attention to the sectoral level of industrial relations. Secondly, the study assesses how sectoral industrial relations regimes vary internationally depending on the degree to which each sector is economically internationalised, and affected by EU level regulation. Finally, a first attempt is made to detect distinctive 'types' of industrial relations regimes at sector level, which, we argue, provides a more detailed picture of European industrial relations than the more abstract, and sector-insensitive, national definitions allow.

The study of national industrial relations systems has over a century of history and traditions. In the context of increasing internationalisation and economic differentiation, the study of sectoral industrial relations at the international level is only making its first steps. This study is a contribution to this emerging perspective and makes a strong case for its relevance, through the identification and categorisation of the European sectoral level as a new dimension for the understanding of industrial relations.

Link to European sectoral social dialogue

To investigate the relevance of sectoral industrial relations, we analyse their implications for the functioning of sectoral social dialogue committees at EU level.

Social dialogue is one of the pillars of the European social model (Welz, 2008). Since the late 1990s, sectoral social dialogue, in particular, has been promoted as a governance instrument in the EU (Dufresne et al, 2006; Pochet et al, 2009; European Commission, 2010). Meanwhile 40 European 'new' sectoral social dialogue committees have been created, which cover about 145 million workers in the

EU27, and have produced more than 500 joint texts. These texts have been grouped by the European Commission[1] into four broad categories (Pochet et al, 2009, p. 18):

- so-called 'agreements', which comprise texts implemented either by means of a directive or by the social partners and the Member States (autonomous agreements);
- 'joint opinions', intended to provide input to European institutions and/or national authorities, 'declarations', which include statements of position by the social partners, and 'tools', which include studies, training packages or dissemination media;
- 'procedural texts', outlining the rules of procedure for the social dialogue;
- 'process-oriented texts', which are of special relevance in terms of their impact for governance as they include frameworks of action, codes of conduct, guidelines and policy orientations. They also contain clear provisions and a process to monitor implementation.

There are large differences across sectors in the output of ESSD in terms of texts agreed. For example, from 1999 to 2007, 16 texts were adopted in the railways sector and 14 in the civil aviation sector, but 'only' six in the hospital sector and one in the steel sector. Texts also differ among sectors. Binding texts have been concluded only in some sectors, and texts were translated into EU law in even fewer.[2] These differences in the 'quantity' and 'quality' of output can be explained by factors such as history (differences in the composition, age and experience of different sectoral committees) and by economic and institutional differences.

This study aims also to investigate the specific industrial relations factors that may support the functioning of the ESSD. Specifically, it asks whether different configurations of industrial relations at the sectoral level across the EU Member States affect the structural capacity of the European social partners to reach agreements at EU sectoral level. In particular, special attention is given to whether the degree of sectoral industrial relations similarity across the EU27 helps facilitate the functioning of the ESSD.

Methodology

The research questions imply a quantitative design in most steps of the analysis. This is for two main reasons. First, the Eurofound representativeness studies and Eurofound country profiles are used as a main reference. Both the representativeness studies and the country profiles rest mainly on quantitative indicators. Second, the research covers all EU27 countries, and nine sectors are investigated. This means that a total of 243 cases form the backbone of the analysis and would 'overstretch' a qualitative analysis. Nevertheless, the research design is not purely quantitative. Quantitative data are explained, and special attention is directed to the (qualitative) explanation of special and 'deviant' cases. In addition to the data and information included in this report, more detailed information for each national sector case is available in sectoral reports from Eurofound's European Industrial Relations Observatory (EIRO). These reports contextualise each national sector in comparison to national institutions, as well as to the European sector level.

This research relied primarily on secondary analysis for data collection. Eurofound representativeness studies are used for the main sector-level data on economic and industrial relations properties. The

[1] For the typology of texts see communication from the Commission *Partnership for change in an enlarged Europe – Enhancing the contribution of European social dialogue* COM(2004) 557 final of 12 August 2004. See also its 'Annex 2: Typology of the results of European social dialogue'.

[2] See Pochet et al 2009, p. 17f for different issues which are covered in different sectors as well as on the number of binding agreements across sectors.

Eurofound report *Dynamics of European sectoral social dialogue* (Pochet et al, 2009) provided data on the ESSD.

Structure of report

The study is based on comprehensive research concerning current debates on similarities and differences in industrial relations in the EU27 with special emphasis on the sectoral level. These debates will be outlined in the first chapter, and the analysis of the research questions is based on three interrelated steps that are described in Chapter 2. Chapter 3 investigates, firstly, similarities and differences in industrial relations across sectors and countries in the EU27 and identifies sectors that are similar in their industrial relations systems. Secondly, it investigates determinants of sectoral similarity in industrial relations regimes that are observable in the EU27. Chapter 4 identifies different groups of sectors and countries in the EU27. The fifth chapter investigates the structural efficacy of the ESSD on the basis of the previous steps of analysis. The sixth and final chapter summarises the main research results, draws conclusions and highlights the relevance of the results for the governance of labour in the EU27.

Analytical framework of the study

1

This research project addresses two interrelated issues. First, it aims to map *sectoral* industrial relations, and to reveal how industrial relations vary by sector, and not just by country (the most common, and sometimes exclusive, level of comparative industrial relations studies). Second, it addresses the implications of sector-level industrial relations configurations for EU regulation and European social dialogue at sectoral level.

The main reason for this research is to help fill the knowledge and analytical gap in comparative industrial relations at the sector level. Most existing research in the field focuses almost exclusively on the national level. For instance, the most popular textbooks in comparative industrial relations (Bean, 1994; Ferner and Hyman, 1994; Ferner and Hyman, 1998; Bamber et al, 2010) do not even feature the word 'sector' as a keyword in their indexes, and while there are frequent mentions of various sectors, there is no systematic analysis of them. The focus on the national level is particularly visible in existing typologies of industrial relations, which tend to adopt geographic configurations – for example, the most recent and authoritative one in the *Industrial Relations in Europe Report* of 2008 (Visser, 2008).

Indeed, national borders are very important for understanding industrial relations, as these have been generally institutionalised either by nation states directly, or within clearly distinct national economic and political spaces. For instance, Crouch (1993) has traced the impact of nation state traditions on European industrial relations since the nineteenth century and earlier, while Traxler et al (2001) have tested empirically the relevance of national 'path dependencies' and the resilience of national industrial relations institutions, and Barbier (2008) has highlighted the role of national cultures for the framing of social and employment issues. In addition, industrial relations as a form of regulation of employment is closely interrelated with the welfare state, which is an eminently national institution with clearly demarcated national models (Esping-Andersen, 1990).

However, there is a growing awareness that variation within countries may be as large as, or even larger than, variation between countries (for example, Locke, 1992). Industrial relations theory has always been aware that one particularly important source of diversity is the sector, given that each sector is characterised by specific product and labour markets, resulting in different workforces, different work practices and different economic contexts. Yet international comparisons of sectors have come to the fore only relatively recently. Katz and Darbishire (2000) reopened the issue with their comparison of metalworking and telecommunications in seven countries, and their theory of 'converging divergences' which suggests that, owing to internationalisation, industrial relations systems converge within sectors, but diverge between them. Because countries may increasingly specialise in some sectors rather than others, this means that in countries with different specialisations the dominant industrial relations arrangements (especially collective bargaining) may diverge – even if they converge within each sector. A broader theoretical foundation for this argument is provided by the 'Variety of Capitalism' approach (Hall and Soskice, 2001). According to this approach, firms vary by the sector they operate in, and states develop complementary institutions, including industrial relations systems, that provide support to some sectors rather than others. In such a situation, globalisation fosters 'institutional arbitrage' and increases country specialisation in those sectors where there is an institutional comparative advantage – for example, machinery production in Germany or biotechnology in the USA. The 'Variety of Capitalism' approach has become very influential and has stimulated major advances in industrial relations research, but has been criticised for exaggerating complementarity and coherence within 'models' (or 'types') of capitalism and, again, underestimating the remaining intra-country differences. Therefore, the various combinations of governance and regulations by country and sector are still an open problem, as for instance the idea of 'recombinant governance' suggests (Crouch, 2005). In particular, the degree to which sectors a country does not specialise in (for example,

services in Germany) will follow the dominant national practice, stemming from other sectors, or the dominant international practice, stemming from the same sector in other countries, is still to be explored and understood. For instance, Doellgast (2009) has recently questioned whether the German telecommunication sector governance corresponds to its 'coordinated' national model. Additionally, it has often been observed that few countries actually conform to the 'ideal types' described by the Variety of Capitalism school, and we do not know whether other, more 'mixed', countries maintain institutions and models of a predominantly national character, and whether they maintain them across all sectors.

This research problem confronts, more broadly, the enduring debate over national path dependency factors versus international convergence factors. While in the 1950s and 1960s convergence arguments were based on organisational and technological change, more recently they have been based on globalisation arguments. This debate is relevant to debates on typologies of industrial relations systems. Existing typologies have focused on countries and national models, but it may be asked whether they are able to account for intersector variation. For instance, with regard to the most recent European typology (Visser, 2008), five 'models' or 'clusters' of industrial relations were identified in the EU, each with a clear geographic concentration: 'Organised corporatism' in Nordic countries, 'Social partnership' in central-western Europe, a 'State-centred' model in southern Europe, a 'Liberal' model in north-western Europe, and a residual, less clearly defined 'Mixed' or 'Transitional' model in post-communist central-eastern Europe. While a degree of generalisation and simplification is inherent in any taxonomic effort, an important empirical question is how these clusters or models vary by sector. In particular, given that studies of corporatism have focused on the differential 'encompassingness' of associations and collective bargaining – in other words, their capacity for combining different sectors (see for example Crouch, 1993) – it is likely that very important cross-sector variation affects countries whose industrial relations systems demonstrate little 'encompassingness', such as the UK and most southern and eastern EU Member States. In this regard, a sector analysis is needed in response to criticisms expressed about classic typologies of industrial relations 'models' as distortive because, in a teleological way, they overestimate national similarity, coherence and rationality, while underestimating cross-border influences and internal variation, change and contestation (see for example Meardi, 2004). The terms 'model' and 'system' both imply internal coherence, integration and rationality, and the term 'model' also has a normative connotation as something that can be followed and imitated. For this reason, when suggesting different typologies this report limits itself to the more descriptive and less value-laden terms 'type' or 'cluster', in a descriptive rather than explanatory fashion. The terms industrial relations 'system' and 'regime' are both used to describe configurations of industrial relations characteristics. Because industrial relations are defined by many 'dimensions' (such as actors or processes) the use of the terms 'system' and 'regime' is preferred as it refers to a set of industrial relations characteristics.

A further topic of debate, with important policy implications, is the possibility of not only international convergence between national states, but the development of 'supranational' industrial relations models. Nowhere has this issue received as much interest as in the EU. The development of an EU-level industrial relations system has been the object of extensive debates that can only be summarised very sketchily here. From a neo-functionalist perspective, there are reasons to expect that increased economic integration and joint regulation across EU countries will foster the development of industrial relations regulation at the same level. From an institutionalist perspective, however, major doubts have been raised, for instance by Streeck (1998), because of the persistence of major differences and even incompatibilities between national institutions. It is apparent that such an issue is particularly relevant at the sector level, given that the impact of the European single market and of EU regulations vary

by sector. For instance, the steel sector has been 'Europeanised' since the European Coal and Steel Community (ECSC) came into effect in 1952, whereas some services sectors, such as hairdressing, have remained localised with few or no transnational influences until recently. One important effort at investigating Europeanisation at the sector level has been made by Marginson and Sisson (2004), who highlighted the impact of multinational companies in fostering a complex double movement: towards decentralisation within national sectors, but also, indirectly and more tentatively, towards cross-border coordination. Marginson and Sisson's study, however, focused on only two sectors (banking and manufacturing) in only four countries. There is a lack of studies covering a broader range of countries and sectors.

The contribution of this study is in the exploration of industrial relations variation at the sector level, and in its linkage to internationalisation factors. It hypothesises that the hitherto neglected classifications and processes at the sector level may be as important as the national ones, not only for the current reality of industrial relations, but also for potential transnational developments. This argument is rooted in an emerging recognition of the relevance of the industry level for the methodology and theory of labour economics (Sako, 2008), the understanding of intranational variation in industrial relations (Arrowsmith, 2010), and more generally in international economics and business (Dicken, 2007).

This focus is operationalised or measurable in three research steps, presented in the third, fourth and fifth chapters of this report respectively. Chapter 3 investigates and compares industrial relations system variation across sectors and across countries. This is to find out whether industrial relations systems vary more by country or by sector, and subsequently, which sectors and which countries are more diverse, and which ones are more internally similar. This in turn relates to the debates referred to above concerning convergence and divergence in comparative industrial relations: do economically internationalised or Europeanised sectors display stronger cross-country similarities than those characterised by national markets and regulations? And do certain countries display greater internal diversity by sector than others, and how does this relate to theories and typologies of national industrial relations systems? While we do not ignore cross-sectional data that would allow us to detect trends of convergence or divergence, we can expect that even a 'snapshot' of the mid-2000s can highlight links between sector industrial relations, national models, and sectoral internationalisation patterns.

Chapter 4 analyses the details of the differences across sectors and countries, looking at the configurations of the various sectors and various countries in terms of industrial relations regimes. Again, this is related to internationalisation debates: which industrial relations characteristics, in terms of associational density, collective bargaining and consultation, prevail in the internationalised sectors as compared with the others? By analysing the data of nine sectors in 27 countries (or at least in all the countries where there are social partner organisations) we are able to test whether the types of industrial relations systems apparent at the sector level resemble the established national typologies. In this way, we are able to propose a (re-)classification of industrial relations models in the EU on the basis of sectors, and to show how far they depart from the national-level ones. As mentioned before, we use the term 'type' instead of 'model' to avoid any connotative associations. However, as the term 'model' is frequently used for the well established typology of countries, we still refer to 'models' when the national level is concerned. However, we can also detect how different countries may display different combinations of industrial relations 'models' across different sectors. This analytical contribution can be used to achieve a much more detailed and nuanced description of European industrial relations than the traditional ones offer. This is important from a company perspective, as adopted by the Variety of Capitalism approach, because it shows whether firms in non-dominant sectors will operate in the same industrial relations regimes as those firms in dominant sectors. This is also important from a gender

perspective, as sectors vary widely in the gender composition of their workforce, and the traditional industrial relations research focus on male-dominated sectors, such as manufacturing, may result in neglect for the specificities of female-dominated sectors. For instance, Hassel (2007) has discussed at length exactly how the dominance of the sector in German industrial relations results in specific gender gaps in the research agenda, given gender segregation in the labour market.

The third and final step, discussed in Chapter 5, is to investigate the relation of sector-level variation of industrial relations to the practice of social dialogue at the European sector level. It has been argued (Leisink, 2002) that sector-level social dialogue at the European level depends on 'push' (for example, economic context, and in particular internationalisation) and 'pull' (regulatory actions by EU institutions) factors. But while the contribution of some sectoral industrial relations factors has been discussed, such as fragmentation by Keller (2003) or strike proneness in various accounts of metalworking, there has been no systematic investigation of them on a broader and more encompassing sector basis. Because of this lack of systematic research we investigate the factors that might affect European-level sectoral social dialogue. Beside certain 'push' and 'pull' factors that affect European-level sectoral social dialogue output we will argue that similarities in industrial relations at sectoral level across countries have a positive impact on the output. In this way, we can identify industrial relations factors that potentially cause the different developments of ESSD by sector that are cogent: that is, they are from the same level of analysis, the sector, rather than the country level. From an industrial relations perspective, we argue that some sectoral industrial relations structures accommodate ESSD more than others, particularly in terms of associational capacity and governance.

These research steps are formalised in the following three hypotheses.

H1: Industrial relations in exposed or otherwise internationalised sectors are characterised by greater cross-country similarity than in protected sectors.

Sectors vary by their exposure to trade, to foreign investment, to the transferability of locations of production, and to transnational movement of labour. Such factors of economic internationalisation are supposed to affect the degree of convergence towards industrial relations practices that are internationally competitive in the sense that they do not hinder (domestic and foreign) investment (although there may be more than just 'one best way'). For instance, to a certain degree, multinational companies may have the ability to 'transfer' some of their industrial relations practices (Meardi et al, 2009). Financial constraints and a shortage of detailed data at the sector level mean we focus here on the two specific dimensions that are most easily observed: transnational transferability of production and presence of transnational firms.

H2: Industrial relations in sectors regulated at EU level are characterised by greater cross-country similarity than other sectors.

This hypothesis takes into consideration the institutional, rather than economic, factors behind internationalisation. In line with the literature on the effects on EU integration on changes in industrial relations (Visser, 2005), it assumes that EU regulation at sector level has a similar effect, independent of the influence of economic internationalisation, on cross-country similarity in industrial relations.

H3: Countries that in prevailing typologies belong to 'cohesive' and 'encompassing' industrial relations clusters (in particular, Nordic corporatism) are characterised by more cross-sector similarity than countries that belong to less encompassing clusters (in particular, southern European, liberal and transition clusters).

While the assumption of this study is that the sector matters, the degree to which it does is likely to vary by country. In particular, in highly centralised countries where the social partners or public authorities regulate employment at a cross-sector level, it is plausible that less variance in industrial relations structures by sector will be apparent than in countries characterised by weak centralisation and coordination. As this is a complex issue that has produced an extensive literature on preconditions and types of corporatism, in this study we simply refer to the widely accepted typologies of industrial relations (Visser, 2008). These consider Nordic corporatism as more 'encompassing' than liberal and mixed models, while countries in social partnership and state-centred models vary in this regard (for instance, France is more centralised than Spain, and Austria more centralised than Germany).

The methods for testing these hypotheses are all quantitative but vary depending on the hypothesis. H1 and H2 are tested through descriptive statistics and regression analysis. H3 is tested through descriptive statistics and accompanied by cluster analysis. This is explained in the next chapter.

The main hypotheses (H) of the study

- **H1:** Sectors that are exposed to international competition are characterised by similar sectoral industrial relations.
- **H2:** Sectors that are regulated at the European level are characterised by similar sectoral industrial relations.
- **H3:** Countries with 'encompassing' industrial relations are characterised by more similar sectoral industrial relations.

It is expected that the capacity of social partners to elaborate (and possibly to implement, but we are unable to test this in this study) common transnational negotiation strategies, and subsequently produce outputs (for example, joint texts, opinions, codes of conduct) is affected by the degree of similarity in industrial relations structures across countries. While the diversity of national industrial relations regimes is often invoked as a crucial obstacle to the Europeanisation of industrial relations, it may be that in some sectors this diversity is less deep and that this opens up more possibilities for European social dialogue, at least at the level of those sectors.

2 Methodological and empirical framework of the study

One key objective of the research is to map and classify industrial relations systems in terms of differences and similarities across sectors and countries. The mapping and classification of industrial relations systems is carried out at the sectoral level and therefore differs from previous attempts. The analysis, in other words the identification of similar industrial relations systems across sectors and countries, is done on the basis of a selection of sectors. The reasons for the sector selection as well as the selection of variables that define industrial relations systems are discussed below.

Selection of sectors

As outlined in the introduction, nine sectors are chosen to analyse differences and similarities of sectoral industrial relations systems in EU27 countries. For reasons of availability of data, a selection of sectors was necessary. As regards the kind of sectors covered, the selection was done in a way that maximises the variance of sector-specific properties that affect industrial relations. Such different sector-specific properties can usually be found in manufacturing and services sectors as they are differently affected by push factors; that is to say manufacturing and services differ markedly in their exposure to international competition. This difference applies not only to their products, but also to their production locations. While locations of manufacturing are transferable across countries, the production of services is frequently bound to the location of consumption. The consumption of most services is usually bound to the peripheral region where people live. Personal services are mostly consumed within a small radius; for example, few people travel long distances for a haircut. However, some services sectors are characterised by substantial shifts towards exposure to international competition. Retail trade exemplifies this as the Internet enables the selling and buying of goods on a global scale. Similar moves towards internationalisation can be found in the banking and finance sectors. Even though some services sectors are not bound to the location of consumption, many services sectors still are. The differences in internationalisation between manufacturing and services are also shown in the survey by Pedersini (2006), which highlights that, in nearly all European countries, relocation of production is a concern in manufacturing while in services this is the case in only a few countries. Hence, one should expect to see more similarities of manufacturing sectors across countries, as compared with services sectors. This is because higher exposure to international competition may induce national manufacturing sectors to converge on similar arrangements, including their industrial relations systems.

Given this basic difference between manufacturing and services, it must be remembered that there are also differences within them. Compared with steel manufacturing, for instance, the locations of many parts of food processing, such as that of sugar, are less transferable due to differences in local consumer taste and the perishability of raw materials and products. It is important to note that, compared with other sectors, many parts of food processing are less transferable. Services sectors differ in their ability to exploit advances in telecommunications that have made some functions more transferable. Banks, for instance, have increasingly offshored back-office services. This is not the case in other segments of services, such as hairdressing and hospitals, because these services are very closely bound to the location of consumption.

If we proceed from the proposition that intersectoral differences in the transnational scope of business activities may translate into differences in the convergence of sectors across countries (which then manifest themselves in similar industrial relations), then we have to consider, for the selection of sectors, not only differences between and within manufacturing and services, but also differences in company size and ownership. Big multinational companies have been establishing an internal market for investment that is driven by such practices as benchmarking, 'best practices' and 'coercive

comparisons' across their national locations (see for example Marginson and Sisson, 2004). This clearly propels convergence across countries without the need to actually relocate production, although it is less clear how much this actually affects the structure of industrial relations. However, if big multinational companies dominate a sector one cannot rule out the possibility that this drives convergence in industrial relations structures, practices, processes and outcomes in such sectors across countries.

From an analytical point of view, there are therefore three criteria essential to the selection of sectors:

- the difference between manufacturing and services;
- the differences in the transferability of production locations within manufacturing and services;
- intersectoral differences in company size and transnational scope of business.

Another criterion for the selection of sectors has been the availability of comparable data. EIRO representativeness studies provide comprehensive information on industrial relations systems in the EU27. EIRO representativeness studies on sectoral industrial relations systems include 13 studies (for example, studies carried out from 2006 to 2008), from which only three can be classified as belonging within the manufacturing sector. Eight of the studies concern services sectors, and half of these concern sectors engaged in transport. As a consequence of this predominance of the services sector within the sample, it is reasonable to differentiate in the sample selection between three main groups of sectors: manufacturing, transport, and (other) services. This categorisation also has an advantage as an analytical argument supports it: the sector portfolio contains two transport sectors with accentuated transnational scope for business activities (for example, civil aviation and sea transport).

Table 1 lists the sectors selected for this research. In line with the above considerations, this sample seeks to maximise inter- and intra-sectoral variety in transnational transferability of production locations and in size and transnational scope of the companies. As the table shows, the sector sample covers sufficient inter- and intra-sectoral variety. Hence, there is no analytical need to include sectors that are not available from the representativeness studies.

Sectors differ fundamentally in their form of production processes, techniques, methods, work organisation and so on. The production of goods and services is a complex organisational and technological mix, which differs from sector to sector. Some processes, techniques and methods can be transferred to other places relatively easily while others are hard or almost impossible to relocate. Because sectors are complex entities that are also hard to define and frequently dissimilar in their production processes, techniques, methods and organisation, any exact classification of sectors is difficult. Nevertheless it is possible to classify different sectors in terms of their transferability of production location. For example, sectors can be differentiated in groups of a 'high', 'limited' and 'lacking' degree of transferability of production location. A measureable basis for such classifications is given by some indicators that express differences in the transferability of production locations, such as foreign direct investment and offshoring activities by companies. The classification of sectors in terms of 'high', 'limited' and 'lacking' transferability of production location, shown in Table 1, rests on both of these indicators. Foreign direct investment subsumes investment of enterprises in an economy other than that of the homeland. In this sense, foreign direct investment includes all investment that amounts to expansion in foreign locations and is thus a broad and general indicator for relocation activities (see Pedersini, 2006). Offshoring activities provide a second measurable indicator of differences among sectors regarding the feasibility of relocating production across borders. In this sense, offshoring is also a measurable indicator for the possibility to relocate production locations of sectors.

Table 1: Sample of sectors and selection criteria

Sectors:	Sector definition:		Selection criteria:	
	NACE Rev.1*	NACE Rev. 2 **	Transnational transferability of production locations	Presence of large, transnationally active firms***
Manufacturing				
Steel	27.1-3	24.1-3	High	Strong
Sugar	15.83	10.81	Limited	Very limited
Tanning and leather	19.1	15.1	High	Absent
Transport				
Civil aviation	62.1-2, 63.23	-	Limited	Strong
Railway infrastructure	60.1	49.1-2	Limited	Limited
Sea and coastal water transport	61.1	50.1-2	High	Strong
(Other) Services				
Hospitals	85.11	86.1	Lacking	Absent
Hairdressing and other beauty treatment	93.02	-	Lacking	Absent
Telecommunications	64.20	61	Limited	Strong

Notes: * As defined by the EIRO representativeness studies.
** Transformation of NACE Rev.1 into NACE Rev.2.
*** Firm size relative to size of the national sector.

According to Table 1, sectors with a 'high' degree of transferability of production locations are steel, tanning and leather, and sea and coastal water transport. This classification for the two manufacturing sectors is supported by the study of Pedersini (2006), which shows that in the steel and tanning and leather sectors (and metal and clothing sectors in general) relocation activities are a major issue within nearly all EU27 countries. This means that offshoring activities have taken place in these two sectors in nearly all EU27 countries. In addition, statistics on foreign direct investment show that steel and tanning and leather sectors are characterised by high levels of foreign direct investment (BEA, 2010). Thus both indicators strengthen the classification of the former sector into the category of sectors with a high degree of transnational transferability of production location. Another sector which is characterised by a high transferability of production location is sea and coastal water transport. Even though offshoring activities are not now a major concern in the EU27 countries, the reason for the classification is that in the past few decades the EU has continually opened up national markets of the sea transport sector to competition, making the sector one of the most globalised industries in the world (see Adam, 2008). The use of 'flags of convenience', a practice whereby shipowners 'flag out' to countries that are more favourable in terms of costs, makes it very easy to transfer the 'location of production' to another country.

In contrast, in sectors such as hospitals and hairdressing the transferability of production location is 'lacking' or '(almost) absent'. The main reason for this is that the services provided in these sectors are heavily bound to the location of production. There are few people who consume their haircuts abroad and for most hospital services the consumption is local. Of course there are a few exceptions, such as dental services, which have become increasingly important, but the highest share of dental services is still bound to distinct locations. The categorisation of these sectors in the group of absent transferability is supported by the fact that in no country in the EU27 are offshoring activities reported (see Pedersini, 2006), while foreign direct investment amounts to zero (BEA, 2010).

Between sectors that have a high or 'lacking' transferability of production location there are various sectors in which the transferability is hindered by several factors so that transferability is limited. These

sectors are: sugar, civil aviation, railways and telecommunications. With some exceptions, such as transport and (tele-)communications in Ireland, the survey of Pedersini (2006) shows that offshoring activities and relocations in these sectors are not very significant. On the other hand, foreign direct investment statistics (BEA, 2010) show that these sectors do have investments that, while not as accentuated as some sectors (such as steel), are far higher than in other sectors (such as hairdressing and other beauty treatments). So these sectors have to be categorised as between the 'extremes'. To be more precise, the food sector generally has low flows of foreign direct investment. Nevertheless, in some food sectors foreign direct investment can be considerable, especially in the food sectors in which the products have a relatively long storage life. Sugar products compared with other foods are somewhere in between, as they have a relatively high storage life so that transport is feasible, but because of the special requirements for transportation (hygiene factors) this is relatively expensive and makes transfers not 'optimal'. However, due to the liberalisation of the sugar market in Europe (see Glassner, 2008) offshoring activities were found, although they were not as intensive as in other sectors such as manufacturing. In short, the sugar sector is characterised by a limited, but not absent or high, transferability of production location.

Civil aviation is also a sector which is in the middle of the spectrum in terms of transferability of production location, as the sector has a unique configuration of transnational and national orientation. The reason is that, on the one hand, the sector covers companies that have many employees working in sites across Europe as well as airlines that are present in many countries. On the other hand there are still many airlines which are deeply anchored in their home countries' national economies. Certain airports, that are part of the civil aviation sector, are frequently seen as important parts of the national economies' infrastructure and not transferable (see Traxler, 2010). Thus, the civil aviation sector as a whole is characterised by limited transferability of production locations. This is similar to the railway sector. Also, this sector is considered as an important part of the national infrastructure and has a large proportion of state-owned, monopoly-like operators. Even though EU legislation has triggered liberalisation of the sector in the past few decades, the monopoly-like structure hinders the transferability of production location (see Traxler and Adam, 2008). Thus the sector can be classified as an in-between sector in terms of transferability of production location. This means that the transferability of production location is limited. A similar monopoly-like structure can be found in the telecommunications sector, which in the past was organised as a form of state monopoly. This sector, as with the railways, was also transformed by EU legislations into a business sector, although the former monopolies still dominate the market. Even though the transferability of production location is more accentuated in telecommunications, compared with railways, the past monopoly-like structure hinders the degree of relocation possibilities (see Traxler, 2007). These sectors are therefore characterised by a limited transferability of production locations.

The empirical part of the research project covers a balanced set of nine sectors in all EU27 Member States that are differently influenced by the push and pull factors. In total, 243 cases are considered and are available to test the hypotheses (nine sectors x 27 countries = 243 cases). Each of these cases will be described by a list of key factors, or variables respectively, of the system. These key industrial relations factors are explained in the following chapter.

Selection of industrial relations indicators

The hypotheses of this study contend that the outlined differences in the degree of internationalisation mean that there are various degrees of similarity between sectors from country to country in terms of industrial relations. In line with this, five variables, describing the profile of sectors, were selected.

With regard to the relations between these variables and the functioning of ESSD, these five industrial relations factors are expected to play a crucial role. Thee factors are:

(i) organisational density;

(ii) collective bargaining coverage;

(iii) fragmentation of actors;

(iv) relation of social partners with the government – for example, involvement of social partners in socioeconomic policy making;

(v) degree of bargaining centralisation.

Categories (i) and (iii) relate to the actors, and the others relate to the relations between them.

All these factors are extensively discussed in the comparative industrial relations literature. Briefly, the rationale for each variable is as follows:[3]

Organisational density: Employers' association density is closely related to collective bargaining coverage, but is also, itself, an important pillar of autonomous and incisive collective bargaining, as well as the main guarantor of its endurance. Union density, by contrast, has often been criticised as a spurious indicator of trade union strength, which may depend on other factors such as political linkages or mobilisation potential (Sullivan, 2010). However, our research does not address trade union strength, but rather the capacity for autonomous social dialogue, at the national and European levels. In this connection, the relevance of union density, with certain exceptions, has been confirmed by several studies (for example, Vernon, 2006). According to Visser (2008), it is also related to a factor (dimension) on which we do not have sectoral data, namely collective bargaining coordination. Overall, we expect the associational density of employers' and employees' associations to reflect, if not their power, their organisational capacity to engage in social dialogue, as well as their 'encompassingness', and therefore their political legitimacy to adopt a regulatory role.

Collective bargaining coverage: This is a central factor (dimension) of all comparative studies of industrial relations, particularly Clegg's (1976) famous study, centred on collective bargaining and trade unions. It also directly affects any regulatory capacity and depends heavily on national regulation.

Actor fragmentation: According to corporatist theory, representative monopoly is crucial for the effectiveness of industrial relations systems, and the more countries (or sectors) that depart from it the more unstable the system will be.

Involvement in policy making: Industrial relations structures overlap and interact with state (for example, legal) regulations at the national level, but the degree of industrial relations actors' involvement in public policy may also vary by sector. This factor (dimension) is relevant for the issue of the quality of industrial relations, on which we face a shortage of sectoral data: where industrial relations actors are consulted by government or government agencies, we can expect more potential for so-called 'political exchange' (Crouch and Pizzorno, 1978) and therefore for 'positive-sum' games and integrative bargaining.

Collective bargaining centralisation: Already relevant in past typologies (for example, Clegg, 1976), this has been at the centre of recent debates on convergence of industrial relations, in particular with

[3] For further details on the five factors see Annex 1.

regard to decentralisation trends (for example, Crouch and Traxler, 1995; Marginson and Sisson, 2004; Traxler et al, 2001).

The focus on these five factors is at the exclusion of other important dimensions, which is a limitation of this study. However, the additional factors (dimensions) that are frequently included in comparative industrial relations studies tend to be more closely dependent on the national regulatory level (role of the law, workplace representation systems) and to affect the company level more than the sector level. Another variable we do not include, power balance, would be important for a study of substantive output of social dialogues. The main limitation in terms of variable selection is the lack of data on strikes and other forms of labour conflicts, but these are not available at the sector level (use of these data would also pose serious problems regarding international comparability).

Stepwise empirical analysis

Testing the above hypotheses, in other words analysing the data, implies a quantitative design. This is for two reasons. Firstly, data are available and collected mainly on quantitative indicators that can be used. Second, the geographical scope of the research covers all EU27 countries, and nine sectors are investigated, with more than 240 cases forming the basis for the analysis. It is evident that this high number of cases overstretches the explanatory power of a qualitative design. Only a quantitative research design in the analysis is appropriate to the background and objectives of this research. Nevertheless, it should be noted that the research design will not be purely quantitative. Quantitative data and results must be explained and interpreted, and special attention must be directed to the (qualitative) explanation of special and deviant cases.

One key objective of this research is to map and classify industrial relations systems in terms of differences and similarities across sectors and countries. There are two approaches to mapping and classifying a large sample of industrial relations systems that are measured by various variables. One is to condense distinct variables into single composite measures. This is, of course, only possible for variables that co-vary. For instance one finds countries and sectors (for example, France) whose industrial relations are highly organised in terms of collective bargaining coverage, but little organised in terms of unionisation. In these circumstances, constructing a composite measure would mean converting differences in kind into those of degree. On the other hand there are many variables that co-vary in the sense that if one variable increases (if it has high observations), the other variable tends to increase as well (it also has high observations). For instance the fragmentation of the industrial relations actors system is characterised by the number of trade unions and employer associations. Another example is the organisational degree of actors that is also characterised by both the membership density of employer associations and unions. Moreover, these variables are usually highly correlated which means that if one variable is high, the other variable is also high and vice versa. Given the need to reduce complexity and to avoid redundancy, and for reasons of interpretation, in the empirical analysis co-varying variables are grouped into measures that do not co-vary. Those measures that are not co-varying also match the five theoretical factors. Each factor is weighted individually. The box overleaf shows the composition of the similarity measure.

The focus on these factors has the advantage that all discussions of results and the implications of results can be concentrated on a clear and manageable, but still very comprehensive, group of five key factors of industrial relations systems (organisational density, collective bargaining coverage, actor fragmentation, involvement in policy making, and collective bargaining centralisation). This means that many other (redundant) variables do not need to be considered.

The similarity measure

The measure consists of five key factors of the industrial relations system, which are composed by weighted variables for industrial relations:

(i) *Organisational density* (OD) consists of the variables sectoral union density (UD) and sectoral employer association density (ED), each weighted with a factor of 0.5.

$$OS = 0.5 * UD + 0.5 * ED$$

(ii) *Collective bargaining coverage* (CBC) consists of the ratio of the total number of employees in a sector covered by a collective agreement to the total number of employees in the sector; weighted by 1.

$$CBC = 1 * CBC$$

(iii) *Actor fragmentation* (Fragmentation) consists of variables number of unions (# U), number of employer associations (# E), number of unions involved in collective bargaining (# U CB), and number of employer associations involved in collective bargaining (# E CB), each with a weight of 0.25

$$Fragmentation = 0.25 * \#\ U + 0.25 * \#\ E + 0.25 * \#\ U\ CB + 0.25 * \#\ E\ CB$$

(iv) *Involvement in policy making* (Involvement) consists of three variables that indicate the interaction of social partners with the state/government – for example, if trade unions are consulted by authorities (U Cons), if employer associations are consulted by authorities (E Cons), if a tripartite board exists (Boards); each dichotomous (Yes = 1, No = 0) variable has a weight of 0.33.

$$Involvement = 0.33 * U\ Cons + 0.33 * E\ Cons + 0.33* Boards$$

(v) *Collective bargaining centralisation* (Cent) consists of variable centralisation of collective bargaining; weighted by 1.

$$Cent = 1 * Cent$$

For details on variables, including operationalisation, and coding see Table A1 in Annex 1.

The methodological and empirical framework includes three interrelated steps of analysis. In *step one* the varieties of industrial relations systems across sectors and countries are analysed. In this research step the focus of analysis is on the investigation of variances (in other words, standard deviations) of the industrial relations systems. The degree of variation of sectors in national industrial relations contexts across the EU27 member countries is analysed, as is the degree of influence of country in industrial relations systems across sectors. This step of analysis gives information about the similarity of sectors and countries. According to our hypotheses we expect differences in the degree of similarity across sectors. In addition, the analysis of the degrees of country cross-sector similarity allows conclusions to be drawn about the relevance of national systems.

Step two of the analysis relates to similarities in the configurations of industrial relations. The study aims to map distinct industrial relations types according to distinct configurations. The statistical tool

that is most appropriate to this task is cluster analysis, which identifies and demarcates distinct groups of the unit of analysis (that is, sectors) according to their similarities in terms of the five key industrial relations factors.

According to the hypotheses outlined above, we expect that sector properties foster similarity of sectoral industrial relations systems if they are positively associated with economic internationalisation. This means that with growing internationalisation cross-national similarities of a sector's national labour relations should increase (in other words, they should approximate the 'sector model'). Given differences in levels of economic internationalisation across the analysed sectors, the result of the analysis should allow a reclassification of 'traditional' industrial relations systems at the sectoral level.

In *step three* the relationship between sectoral industrial relations characteristics (cross-country similarity and types) and the output of the ESSD is discussed. The investigation of the relationship focuses on the general and structural capacities of industrial relations similarity and configurations on the output of the ESSD.

Variety of sectors 3

Industrial relations systems in the EU27 vary by country as well as by sector. In terms of national differences we know, for instance, that in the Nordic countries trade union density is much higher than in 'southern' or 'eastern' EU Member States such as France, Spain or Poland (Visser, 2008).

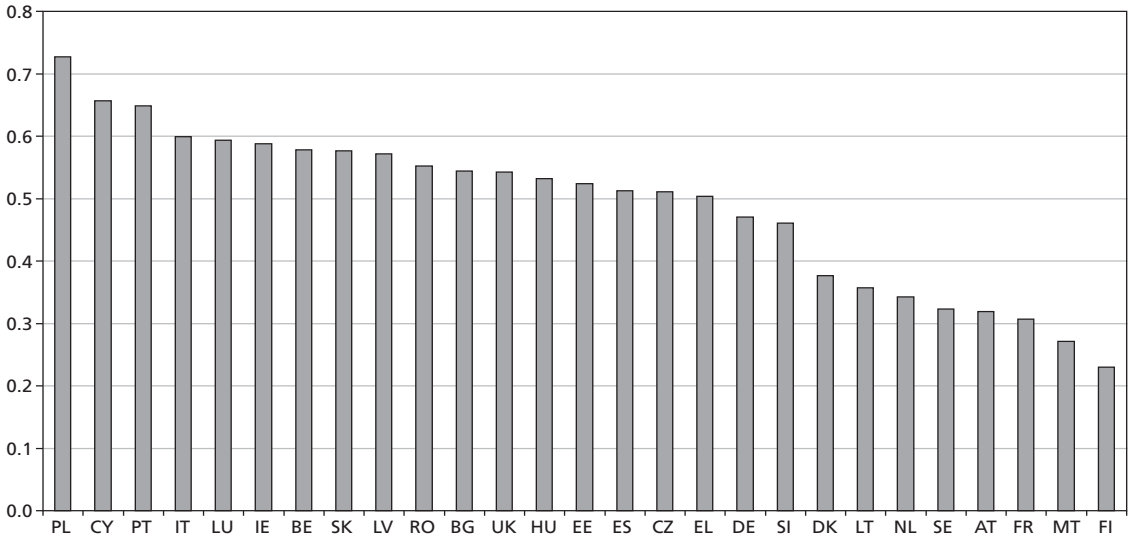
We also know that industrial relations systems are different in different sectors: hence the proposed new variety of sector paradigms. For example Müller-Jentsch (1997) notes that 'old' manufacturing industries are more organised in terms of trade union and employer association membership than 'new' industries in the services sector. Sectors with different proportions of blue-collar and white-collar workers also differ in their organisational industrial relations characteristics. Given that the 'size' and relevance of sectors shifts over time, sectoral characteristics also shape change in national characteristics of industrial relations, in cases of structural shifts in employment between sectors. This critical difference across different sectors within countries has largely been neglected by previous studies on various industrial relations 'models'. The necessity of combining the analysis of national differences and sector differences is addressed in this study.

Country and sector variations

The analysis is carried out by looking at the standard deviations of the key industrial relations factors. For each of the 11 variables, which are listed and described in the previous chapter, standard deviations across countries and sectors are calculated. As different variables have different scalings, all standard deviations are normalised to the range of 0 to 1. The higher the score, the higher the variation and vice versa. Alternatively the coefficient of variation (defined by the ratio of the standard deviation to the mean) is calculated and investigated, as this measure provides an alternative to the normalised standard deviation. Using both measures of variation provides information about the sensitivity of results with respect to the measure used. The following discussion of results focuses on the normalised standard deviations, as one major disadvantage of the coefficient of variation is that it is very sensitive to small changes in the mean; in other words, when the mean value is near zero and it changes slightly, the coefficient of variation changes a lot. As some of our industrial relations variables (for example, the number of sector employer associations, or the existence of tripartite boards) are intrinsically associated with this problem, the usefulness of the coefficient of variation for the problem at hand is limited. Nevertheless both measures of variance are considered, as similar results are likely to strengthen the reliability of the analysis. As mentioned before, some variables are correlated. For example, the variation in the number of unions and the number of unions participating in collective bargaining is correlated, stemming also from the way data were collected. The same can be found, for example, for the variables of union and employer density. For this reason again the normalised standard deviations are calculated on the basis of the weighting described in Chapter 2. The average variation for countries and sectors is calculated on the basis of this. This means that for each country and each sector one single measure (that is, a variation measure) was constructed, which shows how high the variation is within a country and sector. The construction of this variation measure for each country and sector across all industrial relations variables was possible as the problem of non-covariation is not evident, as it is just about the within-variation and not about levels. Focusing the discussion on one variation measure reduces the discussion and comparison between sectors and countries.

First we take a look at the differences among countries. Figure 1 shows a ranking of countries according to their sectoral diversity in industrial relations systems. It can be seen that countries differ substantially in their degree of cross-sectoral similarity of industrial relations systems.

Figure 1: Varieties of industrial relations across sectors within countries

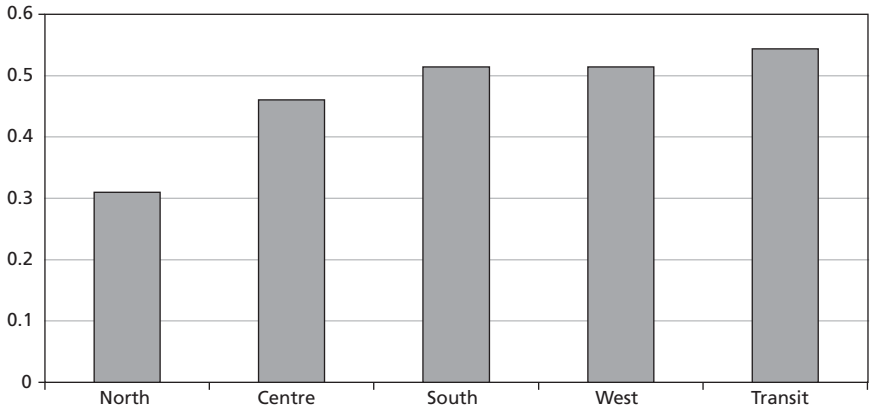


Notes: Scores show the similarity measure; that is, the average normalised standard deviation of the five key industrial relations factors for countries calculated across sectors. The lower the score, the higher the similarity and the lower the cross-sectoral differences in industrial relations. Conversely, the higher the score, the higher the cross-sectoral differences in industrial relations. See Chapter 2 for the composition of the similarity measure and for missing data see Table A1 in Annex 1.

As can be seen in Figure 1, the Member State with the most similarities in industrial relations across sectors is Finland, followed by Malta, France, Austria and Sweden. In these countries industrial relations features display similar characteristics regardless of the sector. Specifically, collective bargaining coverage is uniformly very high, while union density is invariably low in France but invariably high in Finland and Sweden. On the other end, the most dissimilar country is Poland, followed by Cyprus and Portugal. For example, in Poland the number of unions involved in collective bargaining varies from 17 in the steel sector to zero in hairdressing. Union density is as high as 83% in the sugar sector and as low as 16% in the tanning and leather sector, and employer association density ranges from 100% in steel to 10% in hairdressing. Similar extremes are noticeable in Portugal, especially with regard to the issues of collective bargaining coverage and union fragmentation. The ranking of countries is confirmed by looking at the coefficient of variation, even though, especially for 'middling' countries, exact positions change. Poland, Cyprus and Portugal show, in this order, the greatest dissimilarity and Finland, Malta and France show the greatest similarity across their sectors.

However, it is also remarkable that the large majority of countries display a very similar, and quite high, degree of sectoral variation. If we divide countries by clusters according to well-established typologies, as for instance the most recent one proposed by Visser (2008), we find that only one cluster, the Nordic one, clearly differs from the others in displaying stronger cross-sectoral similarity (Figure 2). Furthermore, this result is confirmed by using the coefficient of variation as a measure for differences in similarity. The southern European, western European and especially the eastern European ('transit') clusters are slightly more internally dissimilar, but this is hardly noticeable. This may be because in this regard countries vary strongly within such clusters. For instance, France, with its tradition of strongly centralised state regulation of industrial relations, is much more similar than fellow Latin countries such as Portugal and Italy, while among the central European countries, the stronger similarity of Austria contrasts with the dissimilarity of Belgium. The findings, therefore, confirm H3 with regard to the Nordic countries but do not allow definite conclusions with regard to the other clusters.

Figure 2: Varieties of industrial relations across sectors within national typologies of countries



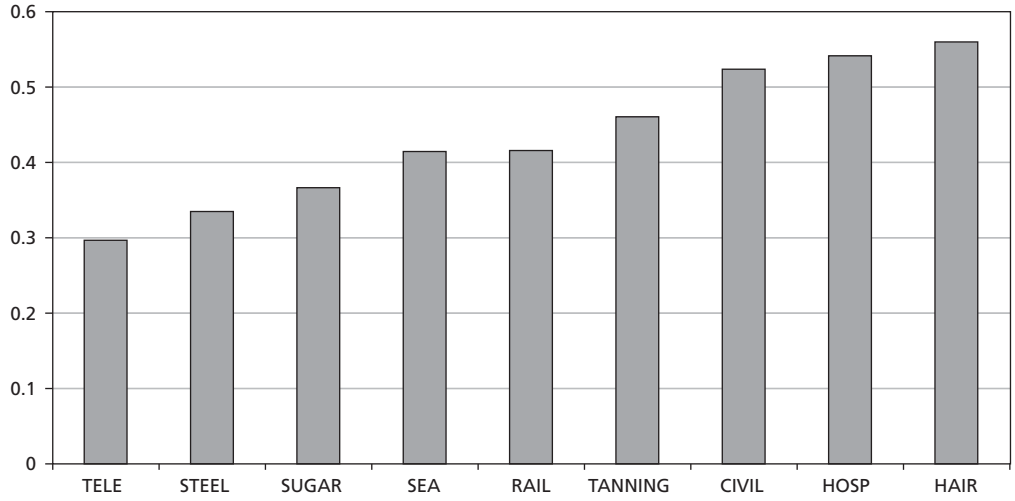
Notes: Scores show the average normalised standard deviation of the five key industrial relations systems factors for groups of countries calculated across sectors. The higher the score, the higher the cross-sectoral differences in their industrial relations systems. Classification of countries follows Visser (2008, p. 51). See Chapter 2 for the composition of the similarity measure and for missing data see Table A1 in Annex 1.

For those countries with a high cross-sectoral variation any kind of national classification appears to be difficult: their intermediate scores in industrial relations characteristics at the national level are statistical artefacts hiding very different situations sector by sector. This is particularly the case in many new Member States (NMS), where the difficulties met by the literature in classifying them (for example, Kohl and Platzer, 2004; Bluhm, 2006), with in particular Visser (2008) not being able to go beyond the vague labels of 'mixed' and 'varied', may be partially overcome with a more cogent focus on the sector than on the national level.

Given this high variation of industrial relations systems within countries it is interesting to compare it with the variation along sector demarcations. Figure 3 shows the variation measure of industrial relations systems for sectors (across countries) and Figure A1 in Annex 2 ranks both the country and sector variations. What can be seen in both figures is that sectors also differ in their degree of similarity. It can be seen that the steel, sugar and telecommunication sectors are characterised by relatively similar industrial relations systems across the EU27, whilst sectors such as civil aviation, hospitals, and hairdressing and other beauty treatments have very different industrial relations characteristics country by country. The overall comparison of degrees of industrial relations similarity (Figure A1 in Annex 2) shows that variation within many countries (Poland, Cyprus, Portugal, Italy, Luxembourg, Ireland, Belgium, Slovakia, and Latvia) is higher than the variation in the most dissimilar sector (across countries), which is hairdressing and other beauty treatments. On the other hand there are only two countries (Finland and Malta) in which industrial relations systems are more similar than in the most similar sector, telecommunications. Broadly speaking, in many countries and sectors the variation within the country is comparable to the variations within the sector. This result clearly questions the cogency of classifications of industrial relations at the national level rather than along the more significant sector demarcations. The next chapter considers these differences in industrial relations characteristics with regard to their implications for the classification (grouping) of industrial relations types. The aim is to achieve a more stringent and clear identification of industrial relations configurations.

The degree of variation across countries by sector requires particular analysis. Figure 3 shows the differences for the nine sectors.

Figure 3: Varieties of industrial relations across countries within sectors



Notes: Scores show the average normalised standard deviation of the five key industrial relations factors for sectors calculated across countries. The higher the score, the higher the cross-country differences in their industrial relations systems. Abbreviation of sectors: telecommunications (TELE), steel (STEEL), sugar (SUGAR), tanning and leather (TANNING), civil aviation (CIVIL), railway infrastructure (RAIL), sea and coastal water transport (SEA), hospitals (HOSP), hairdressing and other beauty treatments (HAIR). See Chapter 2 for the composition of the similarity measure and for missing data see Table A1 in Annex 1.

Figure 3 shows that the steel, sugar and telecommunications sectors have the most similar (across countries) industrial relations systems, while hairdressing, hospitals and civil aviations are the most dissimilar sectors. For example, in the steel sector, trade union density is in general relatively high (the EU median is 60%) There are only a few countries among all EU Member States in which union density is lower than 30%, such as Estonia (8%), Italy (30%), Latvia (28%) and Lithuania (25%). In the Baltic countries and in Italy this corresponds to national characteristics. Apart from these few exceptions, the specificity of the steel industry shapes this sector's industrial relations uniformly in most of the EU, and this is more strongly visible than national industrial relations patterns or traditions. The same similarity can be found in the steel-sector employer association density. There is an EU median of 81% and density is high in most Member States. There are only a few countries, such as the Czech Republic (0%), Estonia (0%), Latvia (30%), Lithuania (0%), Luxembourg (0%), and Malta (0%), in which employer association density in the steel sector is exceptionally low or nil. In other words, steel is characterised by strong organisation density, not only in the few countries where this is a national industrial relations characteristic (the Nordic ones), but also in countries such as Hungary or Spain, where this should not be the case according to national-level characteristics.

By contrast, in a sector as dissimilar as hairdressing and other beauty treatments there are large country variations in terms of the five factors. For instance, there are many countries with very low trade union density rates such as Cyprus, Latvia, and Slovakia (all with zero) and others with intermediate density rates such as Sweden (36%) and Belgium (35%), while high density rates are found in countries such as the Netherlands (60%), Denmark (75%) and Finland (89%). Similarly, employer association density rates in the hairdressing and other beauty treatments sector varies between zero in Cyprus, Czech Republic, Estonia, Greece, Hungary, Lithuania and Latvia, intermediate values in Belgium (41%), Germany (66%), Ireland (55%), Italy (68%) and Sweden (50%), and high density rates in Austria (100%), Denmark (76%), Finland (92%), Luxembourg (85%) and Slovenia (100%). This high degree of diversity in organisational densities across countries makes it difficult to generalise about sectoral

industrial relations configurations in terms of organisational density in the hairdressing and other beauty treatments sector.

The examples – steel and hairdressing sectors – show that the degree of diversity in the industrial relations systems varies significantly from sector to sector. They also show that the more similarities there are across countries the more likely it will be that sectoral patterns of industrial relations explain industrial relations configurations. However, in some countries sectoral characteristics coincide with national characteristics (and/or vice versa) so that it is unclear which is more relevant than the other.

In this sense the similarity measure allows us to draw the *general* interpretation that the lower the score of the measure (that is, the more similar sectors are across countries), the more relevant are sectoral industrial relations 'traditions'. This means that, as shown in Table 3, in the telecommunications sector industrial relations configurations are strongly explained by the 'sector'. By contrast, the higher the measure (that is, the more dissimilar sectors are across countries) the more relevant are national industrial relations 'traditions'. In this sense, industrial relations configurations in the hairdressing and other beauty treatments sector are strongly influenced by state traditions.

Analysis of the push and pull factors of sectoral industrial relations variation

The previous section showed that industrial relations systems differ substantially across countries and across sectors. We now try to explain the sectoral differences. As discussed in the first chapter of this report 'Analytical framework of the study', there are several explanations for the differences in the degree of industrial relations similarity across sectors and across countries, as well as for the convergence of industrial relations systems across countries. Cross-border similarity in sectoral industrial relations is favoured by 'push factors' such as the degree of exposure to international competition, and by an economic integration of product markets. The degree of exposure includes the transferability of production (and therefore the boundaries of the product markets) and the presence of (large) transnationally active firms that may relocate and transfer production locations. Other factors, such as regulations and policies of the EU, frequently called 'pull factors', may also promote a convergence in industrial relations systems towards more similar sectoral types. In particular, sectoral EU policies or regulations may be relevant, alongside the removal of technical barriers to the free movement of goods and services within the EU.

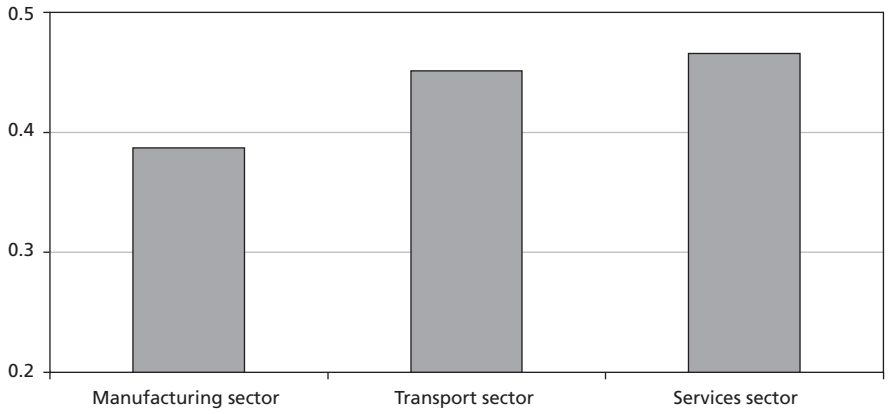
According to the hypotheses, exposed sectors (H1) and sectors regulated at EU level (H2) should be characterised by similar sectoral industrial relations.

Differences in manufacturing and services sectors

Manufacturing sectors are (especially in comparison with services sectors) internationally exposed (Marginson, 2005, p. 521). According to our hypotheses we expect manufacturing sectors to be more similar in terms of their industrial relations characteristics than services sectors. The reason is that two manufacturing sectors (steel, and tanning and leather) are characterised by a high degree of transnational transferability of production locations, and there is one sector (sugar) in which the transnational transferability of production location is limited (see Table 1 for details). Among services sectors, we distinguish between transport sectors (civil aviation sector, railway infrastructure sector and sea and coastal water transport) and other services sectors (hospitals, hairdressing and other beauty treatments sector, and telecommunications) because of differences in their degree of internationalisation. As shown in Table 1, both services sector categories (that is, transport and other services) are on average characterised by a lower degree of transferability of production locations. As

indicated in Table 1, in the civil aviation sector as well as in the railway sector the transferability of production location is limited. On the other hand, in the sea and coastal water transport sector the transferability of production location is also high. On average, the transport sector can be expected to show less similarity in industrial relations across countries compared with the average of manufacturing sectors. The average of the other services sectors is expected to show an even lower cross-national similarity in industrial relations because in two sectors (hospitals, and hairdressing and other beauty treatments) the transnational transferability of production location is lacking and in only one sector (telecommunications) we find limited transferability. As regards a difference between the transport sectors and the (other) services sectors it can be expected that cross-national similarity is slightly higher in the transport sectors because the transport sector, compared with the other services sectors in general, shows a higher degree of mobility of service provision. A good example of this mobility of service provision is that airlines offer their service, the transport of passengers from A to B, at both A and B (for example, check-in service). Therefore, this mobility of service provision may contribute to a 'push' towards cross-border similarity. In Figure 4 the averages across the sector categories of the similarity measure are shown and contrasted.

Figure 4: Varieties of industrial relations across broad sector categories



Notes: Scores show the average normalised standard deviation of the five key industrial relations factors for sector groups calculated across countries. The higher the score the higher the cross-country differences in industrial relations systems. Manufacturing sector includes: steel sector, sugar sector, tanning and leather sector. Transport sector includes: civil aviation sector, railway infrastructure sector, sea and coastal water transport sector. (Other) services sector includes: hospitals sector; hairdressing and other beauty treatments sector; telecommunications sector. See Chapter 2 for the composition of the similarity measure and for missing data see Table A1 in Annex 1.

As can be seen in Figure 4, in the manufacturing sector (as an aggregate) the variation of industrial relations systems is significantly lower than in both the transport and other services sectors (again the aggregates). This result gives empirical support for H1, that 'internationally exposed' sectors are characterised by more similar industrial relations systems than the more protected ones. However, transport sectors do not differ significantly from other services sectors, so H1 is confirmed only for manufacturing, through the effects of trade, but not for services. This leads to the conclusion that the mobility of service provision, which was argued to be different in the transport sector and in the (other) services sector, does not appear to be a relevant 'push' factor for the similarity of sectoral industrial relations systems. These results refer to the aggregates of sectors. It has to be kept in mind that individual services sectors differ. In particular, telecommunications shows a high degree of similarity, which can be explained by the fact that multinationals are common in the sector, and the mobility

of service provision is different from other services sectors (see also Figure 1). However, these results are confirmed by using the coefficient of variation as a measure for variation in industrial relations systems. This may also be due to the fact that the transport sectors studied are still largely provided within national boundaries and/or by very nation-specific public providers.

Determinants of sectoral industrial relations similarity

As pull and push factors are simultaneously present and overlap (as mentioned before, some EU regulations contribute to the internationalisation and openness of markets), a multivariate approach; that is, a regression approach, is used to analyse their impact on shaping similarity in industrial relations systems. The dependent variable remains the sectoral similarity measure of industrial relations.

As explanatory variables for the structural 'push factors', the transferability of location sites and the presence of large transnationally active firms are used. These are 'theoretical' variables based on estimates (derived from the indicators of transferability of locations: foreign direct investment and offshoring activities) and on the relevant economic and industrial relations literature, as no systematic comparable data have been traced at these sector levels. (See Table 1 for details on these variables and on how these variables are derived from foreign direct investment and offshoring activities.) Both variables are indicators for the 'internationalisation' and 'openness' of each sector. As sectors are characterised by their distinct form of production processes, techniques, methods, work organisation and so on, their 'international nature' and 'openness' is the same across countries. Thus, the assumption is made that sectors are similar in terms of the sectoral 'push factors' across all countries. In addition, the presence of large transnationally active firms is of special interest as large firms *may* 'govern' industrial relations, as argued by Branch (2005), even though the influence of local industrial relations traditions can be expected to be more important in some sectors and countries. The regression analysis also considers institutional EU 'pull factors' towards similarity; in other words, the impact of EU regulation on the similarity of industrial relations systems. However, the operationalisation of EU regulation of sectors is difficult as there is no universal agreement on what exactly 'EU regulation' implies because many forms of regulation exist. For instance, the EU regulates several sectors via an extensive body of legislation designed to promote free movement of goods, services and labour within the EU, although regulations may vary in the degree to which they are 'market making' (in other words, liberalising) or 'market correcting', having the effect of re-regulating at the EU level or safeguarding degrees of national intervention. Crucially, in some sectors the EU has promoted liberalisation of previously 'closed' sectors such as the telecommunications and railway sectors. These policies can be expected to have a major impact on the transformation of industrial relations systems. In the analysis we use an indicator of EU regulation that expresses a market-making impact of regulations prepared by the EU Commission: a 'regulated'/'non regulated' dummy variable on the basis of the European Commission's assessment[4] of which sectors' product markets are strongly regulated at EU level. All these variables refer to differences across sectors but not to differences across countries. For example, if a sector is regulated by the EU there are no (important) exceptions for distinct countries and vice versa.

As mentioned, some push and pull factors overlap and some operationalisations of EU regulations are correlated. For this reason different specifications are estimated to consider problems of multicolinearity and to test the impact of various forms of push and pull factors separately and jointly. Also, various robustness tests have been run to corroborate the results. Some of them are reported here, such as the use of company size as a substitute (proxy) for the presence of large and transnationally active firms,

[4] European Commission / Enterprise and Industry: http://ec.europa.eu/enterprise/policies/.

and the consideration of the country and sector sizes (proxied by the total number of employees in each sector and each country and by the logarithm of the total labour force in a country) to control for relevance of sectors as well as dependence (small countries tend to be more dependent on the international context). The results of the analysis are shown in Table 2.

Table 2: Impact of sectoral internationalisation and regulation on the sectoral similarity of industrial relations

Dependent variable:	Sectoral similarity of industrial relations					
Estimation	Ordinary least squares (OLS)					
	(A)	(B)	(C)	(D)	(E)	(F)
Constant	0.5432** (0.0076)	0.5487** (0.0137)	0.5354** (0.0096)	0.5347** (0.0164)	0.5553** (0.0224)	0.5618** (0.0310)
International character:						
Transferability	-0.0717** (0.0065)	-0.0781** (0.0090)	-0.0687** (0.0066)	-0.0692** (0.0101)	-0.0724** (0.0061)	-0.0798** (0.0081)
Multinationals	-0.0022 (0.0056)	0.0028 (0.0070)	-	-	-0.0016 (0.0053)	0.0033 (0.0064)
Company size	-	-	6.6E-07 (7.2E-07)	4.3E-07 (7.4E-07)	-	-
Regulated	-0.1131** (0.0102)	-0.1180** (0.0128)	-0.1311** (0.0123)	-0.1337** (0.0146)	-0.1139** (0.0094)	-0.1182** (0.0112)
Size effects:						
Employment share	-	-0.0018 (0.0046)	-	0.0012 (0.0049)	-	-0.0026 (0.0040)
Log Total labour force	-	-	-	-	-0.0014 (0.0025)	-0.0013 (0.0033)
Fixed effects	Yes	Yes	Yes	Yes	No	No
R^2	0.6227	0.6503	0.6286	0.6685	0.6178	0.6335
Adjusted R^2	0.5639	0.5698	0.5488	0.5652	0.6106	0.6213
F-test (prob.)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

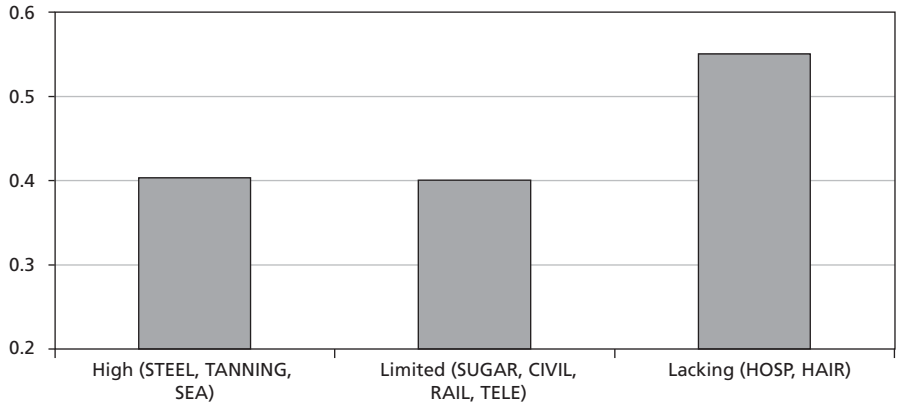
Notes: ** $p \leq 0.01$; * $p \leq 0.05$; (*) $p \leq 0.1$. Panel two-dimensional cross-section analysis: cross section one covers all nine sectors and cross section two covers all nine countries. The consideration of both the country and sector dimension (cross-section) allows to control for (any) differences across sectors and countries. OLS with panel-corrected standard errors (PCSE) according to Beck and Katz (1995) in parentheses. In specifications (A), (B), (C), and (D) a full set of country fixed effects is used. For reasons of space fixed effects are not reported.

Specification (A) is the basis specification and is also the most parsimonious specification as it includes only the main explanatory variables. Specification (B) nests (A) but controls for the size (proxied by the share of employment) of the sector within a country. Specifications (C) and (D) follow the same structure as (A) and (B) but consider variable company size as an alternative for variable multinationals. In specifications (A) to (D) a full set of country dummies is included, which control for (any unknown) differences among the EU27 countries that might affect the sectoral similarity of industrial relations systems. In specifications (E) and (F) these dummy variables are substituted for by the logarithm of the total labour force, which considers the effect of differences in the size of countries. The reason for the consideration of this variable is that smaller countries might be characterised by more similarity in industrial relations systems across sectors. Besides the consideration of the logarithmic total labour force specifications (E) and (F) follow the same structure as (A) and (B); that is, the basis specification with and without the control for the sector size.

With regard to the impact of international exposure, the results across all different specifications (A to F) confirm the result on international transferability of production location: the higher the transferability of location sites, the higher the sector similarity. Note that variable sectoral similarity expresses similarity via low values and dissimilarity via high values. Differences in the transferability of location sites across sectors significantly explain differences in the similarity of industrial relations systems. Figure 5 shows the difference in the similarity of sectoral industrial relations systems across sectors with different degrees in the transferability of production locations. Similarity is significantly lower in sectors in which the transferability of production locations is lacking (the hospital sector and hairdressing and other beauty treatments sector). As Figure 5 shows, transferability does not have to be pervasive. Even in the sugar, civil aviation, railways and telecommunications sectors, which are characterised by a limited degree of transferability, similarity is significantly higher in comparison to sectors lacking transferability. This may be explained by the fact that certain industrial relations dimensions (factors) are shaped even by the 'threat' of a possible transfer of production locations.

The second variable describing the exposure of sectors is the presence of large transnationally active firms. In none of the specifications (that is, A, B, E, and F) can a significant effect on the degree of sector similarity be seen. One reason for the insignificance may be found in an insufficient operationalisation of the variable. To test this, average company size in the sector was used as an alternative proxy for the impact of large transnationally active firms in specifications (C) and (D). However, this alternative variable also exerts no significant effect on sectoral similarity. Thus, based on the data available, the impact of large (transnationally active) firms in shaping industrial relations systems can be doubted, although this would require further testing and the production of better data at the sectoral level.

Figure 5: Varieties of industrial relations systems according to transnational transferability of production locations



Notes: Scores show the average normalised standard deviation of the five key industrial relations factors for sector groups calculated across countries. The higher the score, the higher the cross-country difference in the industrial relations systems. Abbreviation of sectors: steel (STEEL), sugar (SUGAR), tanning and leather (TANNING), civil aviation (CIVIL), railway infrastructure (RAIL), sea and coastal water transport (SEA), hospitals (HOSP), hairdressing and other beauty treatments (HAIR), telecommunications (TELE). See Chapter 2 for the composition of the similarity measure and for missing data see Table A1 in Annex 1.

For the impact of EU regulation on the similarity of industrial relations systems across sectors, the results of the empirical analysis are of similar robustness, as in all specifications the estimated coefficient of variable regulated is significant (Table 2). In specification (A), the basis specification, the impact of the intensity of sectoral EU product market regulations, is analysed and a significant

estimate can be observed. The more the product market of a sector was regulated by the EU the more similar the sectoral industrial relations system. However, even though some sectors are characterised by the existence of numerous EU regulations with different aims and purposes for the regulation of the product market (which are also hard to quantify for any empirical analysis), most of them focus on fostering the international competitiveness of sectors by stimulating economic reforms, which bear on various drivers of productivity growth and on structural changes in particular industries. The goal is to increase international competitiveness in certain sectors in the EU to ensure that it is able to compete in a global economy. Thus, this indicator for the degree of EU regulation may mimic the impact of exposure on industrial relations. One regulated sector is the railways, as the EU Commission initiated many reforms in the European rail industry and market to strengthen the position of railways in relation to other transport modes. Commission efforts have concentrated on the establishment of a strong and competitive rail transport industry, in particular by opening the railway market to competition. Thus EU regulation made the sector more exposed.

Looking at the control variables for the impact of sector and country size on the similarity of industrial relations systems reveals the striking finding that no significant impact was identified. Neither the size of the sector relative to other sectors in a country (which specifications B, D, and F controlled for), nor the size of the country (which specifications E and F controlled for) showed a significant estimate of the coefficients. This result suggests that larger sectors and/or countries are not characterised by more similar (or dissimilar) industrial relations systems across sectors than smaller sectors and/or countries. This means that the similarity observed in industrial relations systems across sectors in Finland and Malta is not explained by the fact that Finland and Malta are relatively small countries (in terms of the size of their labour force). This also implies that the large dissimilarity observed in industrial relations in Poland is not explained by the fact that Poland is a large country (see also Figure 1).

Specifically, the non-significance of the size of the country on sectoral similarity supports the validity of the results on differences in the similarity of industrial relations systems with respect to national classifications, which are reported in Figure 2. However, small countries are usually also more exposed to internationalisation of their economy as they tend to be more specialised and to display a higher proportion of imports and exports. They also have comparably less influence on world prices and are therefore price-takers to a greater extent than larger countries. Therefore, for the analysis of country similarity it is difficult to distinguish between the impact on sectoral similarity of the size of countries and/or the economic 'exposedness' of countries. For this reason, the impact of economic internationalisation on the variation of industrial relations systems across sectors was also analysed by various indicators such as trade openness (sum of imports and exports of goods and services as a ratio of gross domestic product – GDP) and share of imports and exports of goods in world trade (including and excluding intra-EU trade). However, in our statistical analysis (not shown in Table 2 for reasons of space) neither of these indicators was found to be statistically correlated with the dependent variable, variation of industrial relations systems across sectors. The important implication is that exposure to international trade does not directly affect the existence or absence of coherent national 'models' of industrial relations.

Conclusions for hypotheses

As far as our hypotheses are concerned we are able to accept H1, as exposed sectors are characterised by more similar sectoral industrial relations systems. This was shown by comparing the exposed manufacturing sectors with protected services sectors. This result is confirmed by the fact that the transferability of production locations also has a positive effect on sectoral similarity. In addition, EU

regulations that encourage the openness of a sector to international competition show a significant effect on increasing sectoral industrial relations system similarity. In contrast to H1, the acceptance of H2 is more difficult. EU regulation of the sectoral product market explains differences in the sectoral similarity of industrial relations: in other words, the higher the level of regulation, the more similar sectoral industrial relations are, but the effect is hard to distinguish from its effect on openness.

H3 is also confirmed only conditionally. The data confirm that countries belonging to the 'Nordic' model maintain a stronger national similarity with regard to the differences observable in their sectoral industrial relations regimes. Importantly, this happens despite the fact that these countries are very open to international competition. Yet the distinctions among other clusters of national industrial relations systems is less clear, with only a slightly lower similarity reported, as expected, for the 'mixed' transitional cluster of central eastern Europe. It has to be concluded that for most clusters, except the rather small and uniform Nordic one, there are important differences in the degree to which national industrial relations institutions 'encompass' all sectors.

After this analysis we are able to accept hypotheses 1 to 3, if with some qualifications:

- exposure is important in manufacturing, less so in services;
- EU regulations are important but difficult to distinguish from international economic exposure;
- Nordic countries are more similar, but the other 'clusters' are less easy to distinguish.

Taken together, the findings with regard to the three hypotheses confirm the considerable importance of the sector for an understanding of industrial relations. Indeed, sectoral factors are even stronger than the national factors that most analyses of comparative industrial relations have emphasised thus far.

Sectoral types of industrial relations in the EU27

4

The previous analyses clearly showed that the similarity of industrial relations varies substantially across countries and sectors. On the basis of these differences, the focus of analysis in this chapter is the identification of similarities and differences in the configurational properties and qualities of different industrial relations systems types in the EU27. It is useful to explore different configurations of industrial relations systems types as the previous analysis showed only that industrial relations systems vary by country and by sector. What is so far unknown are differences in the specific industrial relations variables: for instance, how do collective bargaining coverage or centralisation differ sector by sector? This chapter investigates these differences with the aim of identifying similar configurational 'clusters' that share common industrial relations features and thus can represent different 'types' of industrial relations systems in the EU27. The analysis (the second step of the project) considers differences across both sectors and countries.

Configurational characteristics of sectoral industrial relations types

The identification of distinct types of industrial relations systems across countries and sectors in the EU27 is done by using cluster analysis. The rationale behind the use of cluster analysis is so that types (in other words, clusters) of industrial relations systems that have similar characteristics may be identified. Given that this study is based on 240 cases covering nine sectors and each case is characterised by five factors of the industrial relation system, the advantage of cluster analysis is that it enables the complexity of the data to be reduced. Using cluster analysis as a quantitative methodology allows the reduction of complexity both in dimensions (factors) and in cases on an intersubjective basis.

By means of cluster analysis, all cases (each sector in each country) are grouped into types on the basis of their similarities in terms of industrial relations system, on the grounds of the five key factors identified (organisational density, collective bargaining coverage, actor fragmentation, involvement in policy making, collective bargaining centralisation; see Chapter 2). The cases that are clustered together share common industrial relations configurations. The distance between the clusters is expressed and measured by the squared Euclidean distance. All key factors were normalised, so that each key factor has a similar weight. The grouping of types (in other words clusters) is defined according to the Ward (1963) method of considering the mean distance between groups (for all key factors), which is optimised to be as large as possible, as well as the variance within groups, which is optimised to be as small as possible. The Ward method has the advantage of tending to create relatively small numbers of clusters of a similar size. The results of the cluster analysis are shown in Table 3 (at the end of this chapter) in summarised form. Details on the configurational characteristics of clusters are given in Table A2 in Annex 3, as well as in Tables A3 to A11 in Annex 3, which are separated for each of the nine sectors. In addition, EIRO sectoral reports give detailed information about each case (country/sector) including further industrial relations characteristics such as collective bargaining extension practices, as well as further economic indicators such as sectoral employment share in relation to total employment in the country, or the average company size.

The advantage of using cluster analysis is that similar groups of cases can be identified. It has to be kept in mind that, of course, the cases within the identified types are relatively similar, but not identical. The cases in each cluster type share many common characteristics in terms of their relation to all dimensions (the five key factors) taken together, but not necessarily in terms of relation to each single key factor. For this reason 'atypical cases' in terms of one (or maybe even two) dimensions (key factors) may be found. As clustering is based on all five key factors simultaneously, the 'deviation' in terms

of one case on one key factor, for instance collective bargaining coverage, may be 'overcompensated' for by other key factors that fit 'perfectly' into a specific type. Clustering, like any kind of typology, necessarily involves the consideration of some 'outliers' or deviations, especially when a relatively small number of types are used.

As can be seen in Table 3 and in more detail for all variables in Table A2 in Annex 3, the size of the five identified types of industrial relations systems varies in terms of the inclusion of cases (sectors/country). The five types are: Type 1 'Dense'; Type 2 'Political'; Type 3 'Lean'; Type 4 'Fragile'; and Type 5 'Empty'. Type 2 is the largest group with 66 cases sharing similar industrial relations characteristics. Another big group of cases is clustered in Type 1 with 51 cases. Type 5 is of intermediate size with 38 cases grouped in it and Type 4 (31 cases) and Type 3 (30 cases) are relatively small. So the different types of industrial relations systems are not evenly distributed. The concentration of cases in categories of Type 1 and 2 might not be representative for the total economy, in other words for all sectors, as this study only considers sectors in which sectoral social dialogue committees are established. 'Traditionally unregulated', or 'empty' sectors, such as many services sectors or retail sales sectors, are not included in our sample. A consideration of these sectors can be expected to increase the number of cases clustered in Types 3 and 4 and especially in Type 5. Therefore, the sector selection may cause a concentration of cases in Types 1 and 2. On the other hand, this unequal distribution of cases among types can be expected to be representative for all sectors for which sectoral social dialogue committees exist. This is because a balanced selection of sectors is made on the basis of 'traditionally' regulated sectors (mostly manufacturing sectors) and 'empty' sectors such as services sectors. See Pochet et al (2009, p. 16) for the list of sectors.

In the following analysis the five groups of industrial relations types are described in terms of their configurational industrial relations characteristics; in other words, in terms of the five key factors, which in turn are defined by 11 variables. As explained above, there will be deviations in some cases in terms of certain factors, which will be discussed below even though, in terms of all five key factors jointly, the grouping of cases into types is comprehensive and disjunctive.

The configurational industrial relations characteristics of *Type 1* (see Table A2 in Annex 3) show a high organisational density of both trade unions and employer associations. The mean of organisational strength of Type 1 is 69%. The mean for union density is, at 61%, lower than employer associations' density which is 76%. Also collective bargaining coverage is high with an average of 81%. On average, the involvement of trade unions and employer associations in policymaking is very high. Nearly all trade unions and employer associations are consulted by authorities and tripartite boards exist for almost all Type 1 cases. Another common characteristic is that these cases frequently show a medium level of centralisation of collective bargaining. The final similarity of the Type 1 cases is that the fragmentation of the actors' system is high. In other words, a relatively high number of unions can be observed, and many of these unions are also involved in collective bargaining. Also, a relatively high number of employer associations exist.

Compared with national typologies of industrial relations systems, the sector and country industrial relations system characteristics of Type 1 can be described as 'dense': there are strong actors, at many levels (not merely the central or the decentralised ones), with extensive levels of engagement in collective bargaining and consultation with the public authorities. Such a type does not correspond to any 'traditional' national model of industrial relations. However, it shares some commonalities with both the Nordic 'organised corporatism' and the central European 'social partnership' types according to Visser's (2008) typology, especially in terms of high rates of collective bargaining coverage.

A few cases in this cluster can be regarded as atypical (or even as 'outliers') on certain factors. For example, the Italian steel sector is somewhat atypical in terms of union density (at 'only' 30%), but this is compensated for, according to the functioning of the cluster analysis, by a high rate of employer association density at 98%, which on average amounts to a relatively high degree of the organisation of actors. The Italian steel sector corresponds perfectly with Type 1 on other factors, such as high actor fragmentation and high degree of involvement of social partners in policy making.

On the other hand, there are numerous cases that are 'typical' for cluster 1. For instance, the Finnish hospital sector is characterised by a high degree of organisation of both trade unions (87%) and employer associations (85%), high collective bargaining coverage (95%), a high degree of actor fragmentation (seven trade unions and three employer associations), consultation of the social partners by the public authorities, and the existence of tripartite boards.

These configurational characteristics in industrial relations systems cross country and sector demarcations. As can be seen in Table 3, for many countries Type 1 is 'dominant' in many sectors. Type 1 describes the industrial relations characteristics in the steel sector for eight countries (Austria, Czech Republic, Finland, Hungary, Italy, Luxembourg, the Netherlands and Spain – see Table A3 in Annex 3 for detailed information), in the civil aviation sector also for eight countries (Austria, Belgium, Bulgaria, Finland, Germany, Greece, Ireland and the UK – see Table A6 in Annex 3), in the hospital sector also for eight countries (Estonia, Finland, France, Germany, Ireland, Latvia, Slovakia and the UK – see Table A9 in Annex 3), and in the sea and coastal water transport sector for 13 countries (Bulgaria, Cyprus, Finland, France, Germany, Greece, Italy, Ireland, Latvia, Portugal, Romania, Slovenia and Sweden – see Table A8 in Annex 3).

Type 2 is the largest cluster with 66 cases (see Table A2 in Annex 3). These cases are characterised by a medium organisational membership density of trade unions (52% on average) and employer associations (67%), and by very high rates of collective bargaining coverage (95%). In most cases there is a high level of actor fragmentation (on average, five trade unions and two employer associations, nearly all of which are involved in collective bargaining), high levels of social partner consultation by the public authorities (although less than for Type 1), the less frequent existence of tripartite boards, and very high degrees of collective bargaining centralisation.

Type 2 may be defined as 'political' because, given prominent levels of centralisation and high collective bargaining coverage rates (despite lower organisational density), the source of regulation is likely to rely at least in part on the state, as confirmed by medium to high rates of involvement of social partners in policymaking. Again, as for Type 1, this sectoral type does not correspond to 'traditional' national typologies. However, according to Visser (2008), some similarities between Type 2 and the central European 'Social partnership' typology can be found, especially in terms of medium density rates co-existing with high collective bargaining coverage rates.

A few atypical cases in terms of a key factor of industrial relations can be found also in this cluster. For instance, there are the cases of the Estonian steel sector (low density), the German steel sector (high density), the Spanish civil aviation sector (low density), and the Swedish civil aviation sector (high density). On the other hand, many cases of perfect 'fits' can be found (for example, the civil aviation sector in Slovenia).

As Type 2 is the largest, its configurational characteristics are dominant in many sectors (see Table 3): steel (eight countries), hospitals (12), railway (12), sugar (eight), tanning and leather (eight) (see Tables

A4 and A5 in Annex 3). While the steel and hospitals sectors also contain a significant presence of Type 1 cases, railways is the sector where the concentration of Type 2 cases is most clear.

Type 3 shares, in many factors (dimensions), very similar industrial relations characteristics to Type 1: high organisational density (69%), high collective bargaining coverage (87%) and a high level of fragmentation of the actors system (on average more than four trade unions and about two employer associations – for details see Table A2 in Annex 3). But there are differences in terms of involvement of the social partners in policymaking, which for Type 3 is very low (usually no tripartite boards and no consultation of social partners by authorities) and, to a lesser degree, centralisation, which is higher. Again, atypical cases can be found, such as the French railway sector (low density), while the Swedish hospital sector is a typical case.

Compared with national typologies of industrial relations, the sector and country industrial relations characteristics of Type 3 do not, again, match any 'model'. However there are similarities with the 'Organised Corporatism' model of the Nordic countries, with few centralised actors. This type can be called 'lean', echoing Traxler (2004), as this form of centralised industrial relations does not include involvement in policy making, but only the essential features of strong organisations and highly centralised collective bargaining.

Type 3 cases are found in all sectors except sea transport, and most frequently in tanning (6) and telecoms (5) (see tables A5 and A11 in Annex 3).

Type 4 clusters 'only' 31 cases characterised by intermediate, but still relatively high, organisational density (mean around 50%), high collective bargaining coverage (86%), low fragmentation of the actors' system (there are few employer associations and trade unions, but they are present), a medium degree of social partner involvement in policy making, and a relatively low degree of centralisation of collective bargaining. For details see Table A2 in Annex 3.

Type 4 may be described as 'fragile': the actors exist and negotiate comprehensive collective agreements (which is reflected by a mean collective bargaining coverage of 86%; see Table A2 in Annex 3), but are not very strong organisationally and, in particular, do not bargain at a central level. Even if there is no direct correspondence in national typologies, similarities are visible mostly with the 'Liberal' model of western Europe, as described by Visser (2008). A slightly atypical case that merits attention is the steel sector in the UK (here there is collective bargaining coverage of 'only' 66%). On the other hand the railway infrastructure sector in the UK is a typical case of cluster 4. It has to be noted that a low degree of actor fragmentation in this sector sometimes means 'no actor', and is therefore a factor of weakness, rather than strength (for details see Table A2 in Annex 3).

Although cluster 4 is relatively small, a concentration of these cases can be found in the civil aviation sector (six countries) and in the railway infrastructure sector (six countries). Across all other sectors the configurational characteristics of Type 4 can only be found occasionally (for their configurational industrial relations profile, see tables A6 and A7 in Annex 3).

Type 5 is, compared with the previous types, very distinct in its configurational industrial relations characteristics as the cases within this cluster show very low organisational density (see Table A2 in Annex 3). On average, trade union density is 19% and employer association density 24%. Collective bargaining coverage is also very low (19%). There is also a low level of actor fragmentation, which actually in this case means the frequent absence of actors. Consequently, there is little or no social partner involvement in policy making. Collective bargaining is very decentralised.

Unsurprisingly, for Type 5 no 'perfect' counterpart in the national classification types can be found, even though the ideal-typical description of Visser's (2008) cluster or model of 'transit' countries (NMS) corresponds rather closely to it. However, we have seen that in the NMS many sectors are actually of different 'types'. This type can be defined as 'empty'. Typical cases of this cluster can be found in hairdressing in many countries – for instance, the Czech Republic and Estonia.

A relatively high number of Type 5 cases are found in hairdressing (13, including all NMS except Slovenia). Type 5 industrial relations systems can be seen as 'dominant' in this sector (for details see Table A10 in Annex 3). However, Type 5 characteristics are also found in many NMS in the tanning sector (see Table A5 in Annex 3), which leads to the issue of clusters' geographic concentration.

Spatial allocation of sectoral industrial relations systems

All classifications of different industrial relations types on a national basis follow 'ideal' geographical patterns. According to Visser's (2008) categorisation of industrial relations in all EU27 countries, the northern model comprises Denmark, Finland and Sweden, which, from a geographical perspective, are spatially allocated in the north of Europe, and are 'neighbours'. The central (continental) countries, which comprise Belgium, Germany, Luxembourg, the Netherlands, Austria and Slovenia, are all in a 'neighbouring block' in the geographical 'middle' of (western) Europe, or at least in the 'middle' of the EU27 countries. The southern (frequently also called Mediterranean) countries, which comprise Greece, Spain, France, Italy and Portugal, are also in a geographical location that allows for a label, even though issues are raised by classifying France as southern. In one sense, classifying France among the 'Mediterranean countries' is adequate from a geographical perspective because France has a Mediterranean coast. On the other hand, (re-)switching names of the industrial relations systems cluster between 'southern' and 'Mediterranean' allows Portugal to be clustered in the same type or model, since Portugal is located in the southern region of Europe. The fourth category, which is frequently labelled as 'western', is accurate in its placement of Ireland and the UK in the west of Europe. However, given that Cyprus and Malta are also included in this category, again there are some weaknesses from a strictly geographical perspective. Nevertheless, from a historical and political perspective, arguments in favour of this classification of Cyprus and Malta with the UK can be found. The fifth category, which is usually identified on a national basis, comprises the former communist countries, which are all arrayed in the centre and east of the European union: Bulgaria, the Czech Republic, Estonia, Latvia, Lithuania, Hungary, Poland, Romania and Slovakia. Here the geographical allocation can definitely be criticised while the classification of their configurational industrial relations characteristics can also be argued with as shown in Chapter 2, as they have vast differences at the national level.

However, whether based on geographical criteria or industrial relations characteristics, any typology inevitably involves not only generalisation, but also simplification so that overall the 'traditional' classifications can be considered as quite 'ideal' in their geographical allocation.

One main novelty of this study is that it focuses on the sectoral level and not on the national level in the categorisation of industrial relations models (types). As mentioned above the main reason for this is that it allows a more precise categorisation of countries because the variation in industrial relations across countries along sector demarcations is lower than it is within countries. In short, countries differ more across sectors than sectors do across countries. The question which remains is whether this (re-) classification on a sectoral basis also follows geographical distributions.

It is likely that some spatial patterns can also be found at the sectoral level. This is especially likely in sectors that are not exposed to international competition, such as hairdressing and other beauty treatments. Classifications and typologies of industrial relations models at the national level have a long tradition. Industrial relations systems, institutions and actors are, indeed, characterised by state traditions and are therefore different in different regions (countries). Because of path dependencies, past industrial relations systems have a high degree of persistence. However, this persistence is different across sectors. One reason for the dissimilarity (that is, the high variation of industrial relations characteristics within countries), is that sector industrial relations change over time and the speed of change is different in different sectors. Exposed sectors in particular are forced to adjust to 'international pressures'. This 'internationalisation' forces industrial relations actors to adjust to international 'standards'. This pressure for change is not found to the same degree in the unexposed sectors. The latter *may* still be characterised by the 'traditional' industrial relations configurations. How 'traditional' industrial relations configurations interact with pressures of internationalisation goes beyond the scope of this research, but needs further research as presumably it is different across countries (and groups of countries) and sectors.

However, these differences in the 'need' to adapt industrial relations systems would imply that in the unexposed sectors, 'ideal' geographical patterns may still be found. This may be the case in the beauty treatments sector, for example.

However, we would expect that in exposed sectors the traditional 'ideal' spatial patterns in the allocation of categories would fade. Moreover, it may be that 'new' geographical patterns emerge in the exposed sectors, which are arrayed according to 'new' geographical conditions such as extensive links of economic interactions (for example, high degrees of trade between some countries or the exchange of labour via migration) between regions or countries.

Figure A2 in Annex 4 shows the 'ideal' classification and the corresponding spatial allocation of the classification according to Visser (2008) and figures A3 to A11 in Annex 4 do the same for each of the nine sectors of our analysis. As can be seen in these figures the 'ideal' spatial allocation of countries is blurred. As expected in the international sectors (manufacturing sectors that are also characterised by a high transnational transferability of production locations), the traditional 'ideal' spatial clustering of countries is not present. For the steel sector (see Figure A3 in Annex 4) there is 'only' one complete 'traditional' cluster that is still observable. This is the 'western' cluster, which includes Cyprus, Malta and the UK (Ireland is not included as data are missing for the steel sector). Even though all countries are still clustered in the same group the traditional classification is put in perspective as Bulgaria is also part of this group. It is also striking that the former communist countries are no longer grouped 'en bloc' on a sectoral basis, but are split in several types throughout nearly all sectors.

For example, in the tanning and leather sector (see Figure A5 in Annex 4) the situation regarding the spatial allocation is different from the 'traditional' classification. Also in this internationalised sector the 'traditional' classification is not viable, but it is interesting to see that 'alternative' regional patterns emerged. (See Table 1 for the characterisation and explanation of the international character of the tanning and leather sector.) In this sector, the UK is the only country with Type 1 characteristics. However, more interestingly, a northern/western block of countries with similar industrial relations characteristics emerged in the tanning and leather sector. This group comprises Portugal, Spain, France and Belgium. These countries build a 'neighbouring block' that also takes in Denmark and Slovenia. A second large block can be found in the tanning and leather sector which ranges in a kind of 'bow' from Finland and Sweden, via Germany, the Netherlands, Austria and Italy to Romania and Greece.

Another smaller block consists of a number of NMS: the Czech Republic, Hungary, Latvia, Lithuania, Malta and Slovakia. So, with a few exceptions, the tanning and leather industry is divided into regional clusters that shift from the west to the east with 'blocks' of countries with different industrial relations configurations.

Figure A8 in Annex 4 shows the spatial allocation of countries in the sea and coastal water transport sector. This international sector is characterised by a high transnational transferability of production locations and by a high mobility of labour across borders and therefore can be expected to have common industrial relations characteristics across many countries. Both factors of internationalisation of the sector suggest a high degree of similarity of industrial relations systems across countries, which indeed is supported by the geographical pattern and by the 'dominance' of a distinct type of industrial relations configuration (Type 1) in many countries. It is particularly notable that more than 50% of all countries are clustered in Type 1 in the sea and coastal water transport sector.

The situation is different in the unexposed sectors, where such tendencies towards common industrial relations systems are lacking, as there is no (strong) pressure for traditional systems of industrial relations to change. Here strong geographical patterns could be expected, that correspond to the 'traditional' national classifications. A look at Figure A10 in Annex 4, which concerns the beauty treatments sector, confirms this argument as it shows various similarities in the spatial allocation of the sector with the national level allocation. This is not completely the case, however, as the spatial pattern is 'dominated' by two geographical blocks. One comprises Sweden, Germany, Austria, Italy, France and Portugal. A second block of central, eastern and some southern European countries comprises Bulgaria, Cyprus, the Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Luxembourg, Poland, Romania, Slovakia and the UK. With the exception of Slovenia all former communist countries share the same industrial relations configurations in this sector. Overall, this geographical pattern matches relatively well with the national-level classifications.

The inspection of the spatial allocation of countries at the sector level showed that the 'traditional' national geographical pattern is comprehensively challenged. This is especially the case in sectors that show a high degree of exposure to international competition. At the sectoral level, new spatial patterns emerge, which could be explained in the exposed sectors by a high degree of economic dependencies. In the unexposed sectors the situation is different; even though no perfect match with the traditional national spatial allocation is found, a kind of correspondence may be observed, which supports the idea that in these sectors state traditions in industrial relations still shape the present situation. In most previous categorisations of countries, the NMS and in particular the former communist countries are categorised as a common block. This analysis showed that this is problematic, at the sector level, as the NMS are not a homogeneous 'block'. Industrial relations regimes at the sectoral level are very dissimilar across the NMS; in some countries and sectors they do not exist at all but in others there are highly organised industrial relations systems, and NMS in many sectors share more similarities with other EU15 countries than with each other.

Table 3: Overview of characterisation of clusters/types

	Type 1: *'Dense'*	Type 2: *'Political'*	Type 3: *'Lean'*	Type 4: *'Fragile'*	Type 5: *'Empty'*
Organisational density:	High	Medium	High	Medium/High	Very low
Collective bargaining coverage:	High	Very high	High	High	Very low
Actor fragmentation:	High	High	High	Low	Very low
Involvement:	Very high	Medium/high	Very low	Medium	Low
Centralisation:	Medium	High	High	Low	Low
Sectors/Countries					
Steel	AT, CZ, FI, HU, IT, LU, NL, ES	BE, DK, EE, DE, EL, LV, RO, SE	FR, PT, SK, SI	BG, CY, MT, UK, (PL)	LT
Sugar	HU, IT, RO	AT, BE, DK, FI, FR, NL, SI, ES	DE, SK, SE	BG, LV, LT, PT, (EL), (PL)	CZ, UK
Tanning and leather	UK	AT, FI, DE, EL, IT, NL, RO, SE	BE, DK, FR, PT, SI, ES	BG, CY	CZ, HU, LV, LT, MT, SK, (PL)
Civil aviation	AT, BE, BG, FI, DE, EL, IE, UK	FR, IT, RO, SI, ES, SE	DK, HU	CY, CZ, LT, LU, MT, PT, (NL), (PL)	EE, LV, SK
Railway infrastructure	IT, PL	AT, BE, FI, DE, HU, IE, LV, LU, NL, RO, SI, ES	DK, FR, SE	BG, CZ, EE, LT, PT, SK, UK, (EL)	
Sea and coastal water transport	BG, CY, FI, FR, DE, EL, IT, IE, LT, PT, RO, SI, SE, (PL)	AT, BE, DK, LV		MT	CZ, EE, LU, ES, UK
Hospitals	EE, FI, FR, DE, IE, LV, SK, UK	AT, BE, BG, DK, IT, LU, NL, PT, RO, SI, ES	CY, EL, SE	CZ, MT	HU, LT
Hairdressing and other beauty treatments	FI, IE	AT, FR, DE, IT, PT, SE	BE, DK, NL, SI	ES	BG, CY, CZ, EE, EL, HU, LV, LT, LU, PL, RO, SK, UK
Telecommunications	AT, DK, NL, RO, SK, ES	BE, FR, HU	FI, IT, PL, SI, SE	EE, DE, LT, MT	BG, CZ, LV, LU, PT, UK

Notes: Classification is based on the squared Euclidean distance and countries are merged according to Ward's method.
For a detailed characterisation of all variables that describe the types/clusters see tables A2 to A11 in Annex 3.
Some countries/sectors are not classified because of missing data: Steel: IE, (PL); Sugar: CY, EE, IE, LU, MT, (PL), (EL); Tanning and leather: IE, LU, EE, (PL); Civil aviation: (NL), (PL); Railway infrastructure: CY, MT, (EL); Sea and coastal water transport: HU, SK, NL, (PL); Hospitals: PL; Hairdressing and other beauty treatments: MT; Telecommunication: CY, EL, IE. Countries in brackets are classified on the basis of one missing variable if and only if all other variables correspond exactly to the type. Note that countries in brackets are not considered in the analysis regarding the implications of sector variety for ESSD.

Implications of sector variety for European sectoral social dialogue

5

Based on the previous results on sector configurations in industrial relations in the EU Member States, this chapter attempts to address the interrelationship between sector configurations and the ESSD. The discussion draws on the study of Pochet et al (2009) on the dynamics of European sectoral social dialogue, which provides extensive information on ESSD outputs in terms of their number, subject, type and implementation procedures. One might consider examining the impact of EU-level regulation in terms of the regulatory impact on the behaviour of national industrial-relations actors. However, this is certainly beyond the scope of this research because it would mean in-depth analysis of each sector and country in order to establish whether certain observed behaviour can be traced to EU regulation, given the existence of many other factors that may also have influenced this behaviour. Instead, it is reasonable to refer to the relationship with EU-level regulation in terms of its *structural* capacity for governing sectoral industrial relations. The issue of structural governance capacity is important because the implementation of EU law is strongly contingent on the national actors and the specific context in which they are embedded. This is stressed by the study of Pochet et al (2009) when pointing to the importance of the national framework. Since a discussion of the interaction of sector-*unspecific* (in other words, cross-sectoral) EU regulation and sector-*specific* industrial relations is not relevant for this study, this research centres on sector-specific regulations.

In this respect, the structural capacity of sector-specific EU regulation is affected by the kind and scale of varieties of the sectoral industrial relations systems. Put more specifically, the argument which is investigated here is that structural capacity increases with the degree of similarity of sectoral industrial relations across countries. Elaborating on the possible link between the sectoral industrial relations characteristics analysed in this study and the development of ESSD in the nine sectors under investigation, we identify further research questions to be addressed in the future that highlight the nature of the relations between national sector and European sector levels.

ESSD output and sectoral industrial relations

Expressing differences in the output of ESSD among sectors is difficult. At first glance it seems natural to look at the number of texts produced in different sectors, as there are substantial differences among sectors. The documents (texts) produced in the ESSD include – according to the classification by the European Commission – outcomes (in other words, output) such as:

- 'agreements', which are implemented either by means of a directive or by the social partners themselves and the Member States (for example, autonomous agreements);
- 'process-oriented texts', which contain clear provisions and processes to monitor implementation;
- 'joint opinions and tools', which attempt to provide input to the European institutions and/or national public authorities ('joint opinions'), declarations by the social partners ('declarations'), and studies, training packages or dissemination media such as websites ('tools');
- texts that address rules of procedure for the social dialogue ('procedural texts').

However, the overall functioning of the ESSD in different sectors can be only partially assessed on the basis of the total number of texts that are produced in each sector. Concrete measures taken at national or company level may not always be documented and the link with the text at European level is not always straightforward. Many texts are rather declarative in nature, and merely aim to raise awareness (European Commission, 2010). For this reason we concentrate the analysis of the functioning of the ESSD in terms of the 'produced' output also on process-oriented texts (PO texts) and agreements.

Compared with the other categories of texts, these two kinds of output are the best available proxies for appraising ESSD that is relevant to industrial relations. Process-oriented texts include frameworks of action, guidelines, codes of conduct and policy orientations. Even though these texts are not legally binding, they must be followed and the progress of implementation is assessed. Process-oriented texts are an 'ideal' output for the purpose of our research as they contain clear provisions and have a monitoring system for implementation, so that their impact is 'controlled'. It is advantageous to investigate process-oriented texts as their role for the governance of labour increases (Visser and Ramos Martin, 2008). Agreements (whether or not they are implemented through European directives) are the texts with the most likely impact on employment relations, especially on working conditions and issues such as health and safety at work, vocational training, skills, and equal opportunities. In transport sectors, such as the railway, civil aviation and sea and coastal water transport, such agreements had a major impact on working conditions (for instance, working time).

The combination of a small number of observations and major qualitative differences between sectors in terms of the European social partners' approaches would mean that investigating only ESSD output on the basis of one kind of text would provide a partial, and arguably distorted, picture with regard to the more general governance potential of ESSD. For this reason the following discussion will focus on the total number of texts, agreements, and process-oriented texts (Table 4).

In short, in the nine sectors of this study, 82 texts are the output of the ESSD during the years 1999 to 2007. However, the number of texts is not distributed equally among the nine sectors. In the steel sector, for example, only one text can be found and in the civil aviation and railway sector 14 texts can be found in each. As regards agreements and process-oriented texts the output in terms of 'quantity' is far lower. As has been mentioned, this says nothing in terms of their 'quality'; in other words their impact for the governance of labour. Process-oriented texts can be found in about half of our sectors: the sugar, tanning and leather, railway, hairdressing and telecommunications sectors. Agreements are rare in the sense that only in railways and sea and coastal water transport can agreements be found.

Table 4: Age of ESSD committees and output

Sector	Creation of formal committee	Creation of new committee	Total number of texts (1999–2007)	Agreements	Process-oriented texts
STEEL	1951	2006	1	0	0
SUGAR	1999	1999	12	0	1
TANNING	2001	2001	11	0	1
CIVIL	1990	2000	14	0	0
RAIL	1972	1999	14	2	2
SEA	1987	1999	6	1	0
HOSP	2006	2006	5	0	0
HAIR	1999	1999	8	0	2
TELE	1990	1999	11	0	1

Notes: Abbreviation of sectors: Steel (STEEL), sugar (SUGAR), tanning and leather (TANNING), civil aviation (CIVIL), railways (RAIL), sea and coastal water transport (SEA), hospitals (HOSP), hairdressing and other beauty treatments (HAIR), telecommunications (TELE). Source: Pochet et al (2009). Please note that in SEA in 2009 an additional agreement was concluded and in HOSP in May 2010. In the following analysis, agreements in sectors SEA and HOSP are not considered, as the time span of the similarity measure data does not correspond with the date of these agreements.

We consider the degree of similarity of sectors across countries, which we described in Chapter 3 as one possible determinant that influences the structural capacity of the ESSD. This is attributable to two reasons. Firstly, the emergence of common standpoints among actors from different countries should be easier when differences among their countries of origin are smaller. Additionally, the five factors of

industrial relations we have compared at sectoral level are logically linked to the capacity to develop social dialogue. In particular:

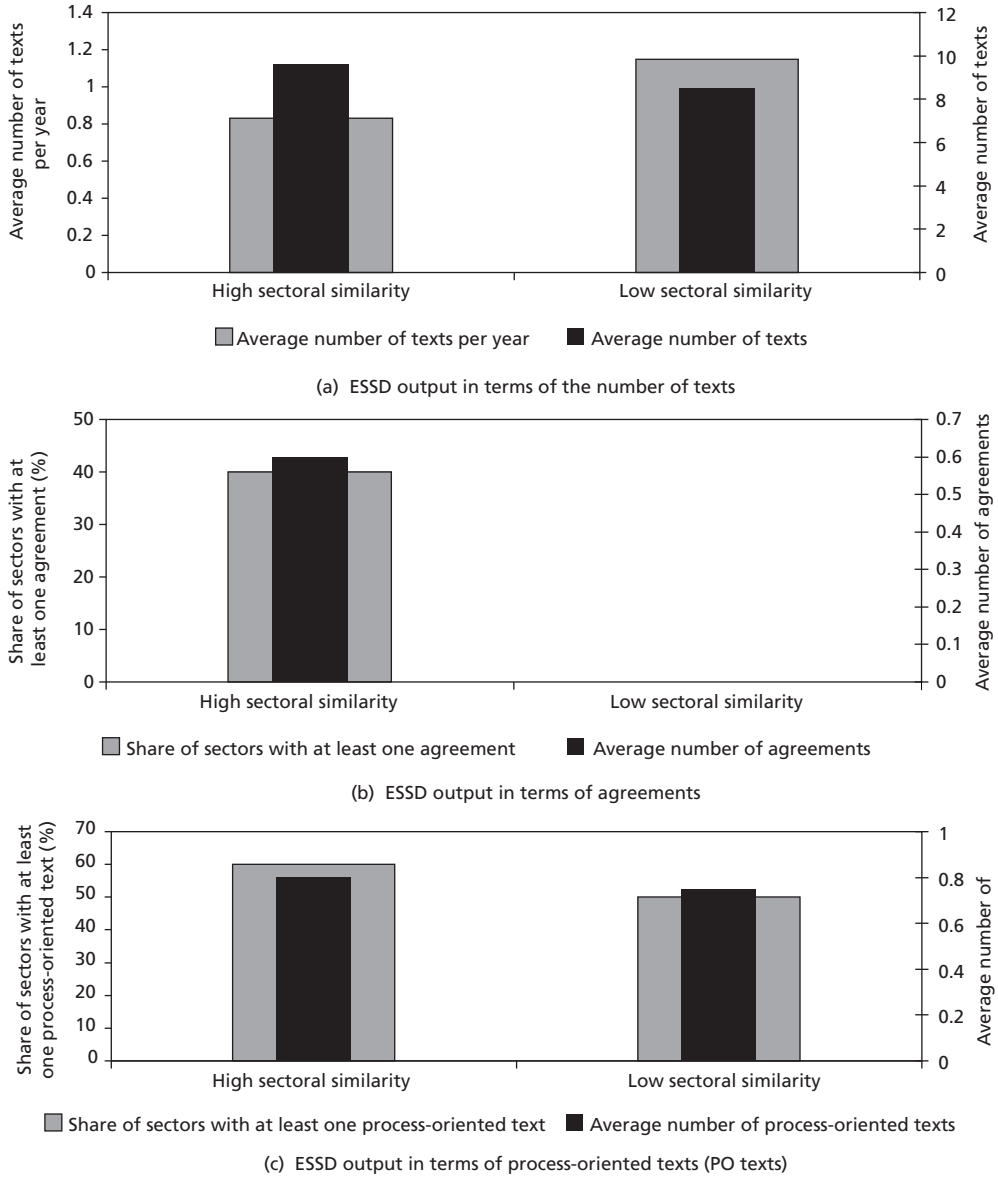
- organisational density affects the organisational capacity and legitimacy of the social partners;
- collective bargaining coverage affects the regulatory capacity of texts agreed within the ESSD;
- actor fragmentation has been argued to negatively affect ESSD (Keller, 2003);
- involvement in policy making at the national sector level builds experience that can be used within ESSD, whose agenda is closely related to policy making at EU level;
- collective bargaining centralisation involves multi-employer bargaining, an important precondition for further centralisation at national or European levels.

The relationship between the ESSD and these five factors is two-directional. Whether or not ESSD agreements and process-oriented texts are implemented at national level depends on the national system of implementation (for example, whether there are extension mechanisms or not). At the same time this has an impact on whether collective bargaining coverage is high or low at national level. For this reason there is a two-directional relationship between collective bargaining coverage at national level and the implementation of ESSD outputs.

Below we compare the impact of different degrees of similarity upon the output, in other words on the number of texts, of the ESSD. As the output of the ESSD may also be influenced by the 'age' of the committee (the older the committee, the more time it has had for the elaboration of all kinds of texts), this was investigated by looking at the date of creation of a new sectoral committee. By correlating both the age of 'new' committees with our output variables (total number of texts, agreements and process -oriented texts) we find some correlations: 0.73 with the number of texts, 0.34 with the number of agreements, and 0.57 with the number of process-oriented texts (according to Pearson's correlation). As the correlation between the age of sectoral committees and the total number of texts is high, we also measure the output by the number of texts per year to 'control' for differences in the age of committees. In addition we analyse the impact of the degree of sectoral similarity on agreements and process-oriented texts on the basis of their existence or absence in sectors, in other words reflecting the percentage share of sectors with at least one agreement or process-oriented text respectively. To be more precise, agreements can be found in the railway and sea transport sector. However, whereas in the railway sector two agreements can be found, process-oriented texts exist in the sugar, tanning and leather, railway, hairdressing and telecommunications sectors. Furthermore, two process-oriented texts are found in the railway sector as well as in the hairdressing and other beauty treatments sector. For both ESSD output variables agreements and for process-oriented texts their absolute number is limited. As, the number of sectors (nine) under investigation is also relatively low, a sector with two agreements and two process-oriented texts has a major 'weight' in terms of its functioning. However, this 'weight' may be too high. Therefore the consideration of sectors with and without agreements and process-oriented texts offers a good alternative to evaluate the functioning of the ESSD.

Below we assess whether differences in the sectoral similarity are associated with differences in the output of the ESSD. We differentiate between sectors characterised by a high degree of sectoral similarity and by a low degree of sectoral similarity. Sectors with a high degree of sectoral similarity (telecommunications, steel, sugar, sea and coastal water transport, railways) have a similarity measure that is below the average across the nine sectors (that is, they are below 0.43) and sectors with a low degree of sectoral similarity (tanning and leather, civil aviation, hospitals, hairdressing and other beauty treatments) are above the average. Figure 6 compares differences in the output for our three

Figure 6: Comparison of sectoral similarity with ESSD output



Notes: The figures are based on the data shown in Table 4. Agreements in the sector for sea and coastal water transport in 2009, as well as in hospitals in 2010, are not considered, as the time span of the similarity measure data does not correspond with the date of these agreements. The grouping of sectors according to high and low sectoral similarity is based on the similarity measure scores (in other words, the average normalised standard deviation of the five key industrial relations factors for sector groups calculated across countries). The average similarity across the nine sectors is 0.43. Sectors below the average are considered as sectors with a high degree of sectoral similarity (telecommunications, steel, sugar, sea and coastal water transport, railways) and sectors above the average as sectors with a low degree of sectoral similarity (tanning and leather, civil aviation, hospitals, hairdressing and other beauty treatments). See Chapter 2 for the composition of the similarity measure and for missing data see Table A1 in Annex 1. See Figure 3 for the ranking of sectors. Please note that the number of sectors is different between the two groups. The group of sectors with a high degree of similarity comprises five sectors while the group of sectors with a low degree of similarity comprises four. The average number of agreements and process-oriented texts is calculated by using the arithmetic mean over all sectors within each group (in other words, groups of sectors with high and low sectoral similarity). The share of sectors with at least one agreement or process-oriented text respectively in each group is calculated as the percentage share. There are two sectors with agreements (railways and sea and coastal water transport). Both sectors are in the group with a high sectoral similarity. As we have five sectors with a high degree of sectoral similarity, two sectors within this group account for 40% of agreements. Because no sectors with agreements can be found in the group with a low degree of sectoral similarity, the share is 0%. In terms of process-oriented texts the calculation is analogous. In the group of five sectors with high sectoral similarity there are three sectors with process-oriented texts (sugar, telecommunications, railways) which amounts up to a share of 60%, and in the group of four sectors with low sectoral similarity there are two sectors with process-oriented texts (tanning and leather, hairdressing and other beauty treatments) which amounts up to a share of 50%.

variables (texts, agreements, and process-oriented texts) between the group of sectors with high sectoral similarity and the group with low sectoral similarity.

As can be seen in Figure 6, in sectors with a high degree of sectoral similarity we find a higher output. In terms of the number of texts, the average number is higher than for sectors with a low degree of sectoral similarity (see Figure 6a). In terms of the average number of agreements this difference between the two groups of sectors is even more accentuated because agreements can be found only in sectors with a high degree of sectoral similarity. No agreements at all can be found in sectors with a low degree of sectoral similarity (see Figure 6b). Also in terms of process-oriented texts we find a higher output in sectors with high sectoral similarity as in sectors with a low sectoral similarity (see Figure 6c). However, the age of sectoral committees is different, which implies that older committees can be expected to have a higher output compared with more recently formed committees. To control for that the average number of texts per year is used as an alternative output measure between sectors with a high and low degree of sectoral similarity (see Figure 6a). In contrast with the average number of texts, the average number of texts per year is higher in sectors with a low degree of sectoral similarity. This partially contradicts the conclusion based on the average number of texts. Using the average number of texts per year has the advantage that obvious time limitations in the creation of texts are considered (because older committees had more time to 'produce' texts), but has the disadvantage that the relevance of the 'time effect' is not correctly captured (for example, committees gain additional experience every year and some committees gained experience within 'older' committees, which have a long tradition is some sectors). The steel sector, for example, is characterised by a high degree of similarity across the EU but only one text was established. The reason for this low output is that the sectoral committee was established in 2006. Using the number of texts per year as an indicator would control for the recent establishment of the committee. However, in the hospitals sector there are five texts even though the committee was formed in the same year as that of the steel sector. This suggests that there are several more reasons why the number of texts differs, as well as why new sectoral committees were founded. For example, the steel sector's previous committee was formed in 1951. Making a similar control for age of committees for the output variables agreements and process-oriented texts appears to be less useful as the absolute number of agreements (three) and process-oriented texts (seven) is very low. Therefore, as an alternative ESSD output measure just the existence or absence of agreements and process-oriented texts in sectors is used. The existence or absence of agreements and process-oriented texts in sectors is compared with the total number of sectors (in each of the two groups). This is shown in Figure 6b for agreements and Figure 6c for process-oriented texts. As can be seen for these two output variables the results echo the difference using the absolute numbers. Again, in sectors with high sectoral similarity there are more agreements and process-oriented texts. Thus the ESSD output is higher in sectors with high sectoral similarity compared to sectors with low sectoral similarity.

The differences in the output measures between the two groups of sectors for the three variables may be interpreted as not very large. In terms of the average number of texts per years, lower sectoral similarity suggests a higher output. Nevertheless there is a strong one-directional difference in terms of output and no output in terms of similarity for all three variables. Overall, this difference between output and no output for all three output variables of the ESSD supports the argument that ESSD outputs are favoured by similar industrial relations across countries.

According to Leisink (2002), the ESSD may also be favoured by other factors such as economic, institutional and political factors that are pushing social partners towards a social dialogue. Other factors, such as socioeconomic policies of various kinds from the European Commission, may 'pull' in the same direction. For methodological reasons we are not able to analyse these factors but we

identify this as an area for further research. A study of a larger sample, using more sectors, as well as the consideration of case-specific (sector *and* country specific) data would enable such an analysis.

Sector variations and the ESSD

Sectors and countries differ in terms of their structural capacity to govern the labour market as sectors have their own specific dynamics and configurations. Some sectors and countries are more internally similar in their industrial relations characteristics. In these cases, ESSD is more likely to act as a potent regulatory force. There seem therefore to be certain genuine industrial relations factors behind the success or failure of ESSD, beside the contextual push and pull factors discussed by Leisink (2002).

While this study does not contain an assessment of ESSD, its focus on its relations with sectoral industrial relations has produced findings that call for strong attention to be paid to sectoral industrial relations characteristics, as it would be incorrect to infer, from the sceptical critiques that have been cited, that the European sector does not matter. Actually, the findings have shown that sectors affect industrial relations more than countries do (Chapter 1). On the basis of these results it can be argued that the functioning of ESSD is favoured by certain configurational characteristics of sectoral industrial relations systems. In particular, high centralisation and high collective bargaining coverage are likely facilitating factors. The rail sector, with the most impressive output in terms of agreements and process-oriented texts, displays the highest number of countries with 'political type' industrial sectors (12). Only hairdressing has produced significant outputs while having a large number (13) of countries in the 'empty' type, but at least in that sector, five particularly influential countries (because of size, history and their organisations' involvement in Brussels) – Germany, France, Italy, Netherlands and Sweden – display relatively high levels of organisation. These configurational characteristics in combination with a high degree of similarity in industrial relations characteristics across/within the sector/country may trigger particularly positive effects associated with ESSD. In this sense we can argue that there is a potential link between sectoral industrial relations and ESSD, and therefore the emergence of European-level governance of employment.

The empirical analysis has not touched directly upon the issue of the implementation of ESSD output such as process-oriented texts. However, it is reasonable to expect that the described link between sectoral industrial relations and the structural capacity of ESSD is reflected to an even greater extent in the implementation by national actors, for two reasons. First, the link between sectoral industrial relations and ESSD is particularly visible in the case of process-oriented texts, which contain clear provisions and a process to monitor implementation. Secondly, it is arguable that the governance of the labour market at the sectoral level via ESSD will benefit from the greater structural capacity of the identified configurations in combination with sectoral similarity. As has been noted, 'the implementation of the process-oriented texts is dependent on voluntarism and on the goodwill of the national actors' (Pochet et al, 2009, p. 63). Also, Keller and Sörries (1998) argue that such voluntary agreements under the ESSD can only be effective in highly coordinated bargaining structures with a high degree of coverage, which is confirmed by our findings on the positive effects of configurations including high levels of collective bargaining coverage and centralisation. Most process-oriented texts are non-binding but it is reasonable to conclude that this does not necessarily impede implementation. There is 'pressure' for implementation because of the 'moral weight' (Visser, 1998) of agreements, especially when agreements are backed by monitoring processes, as in the case of our dependent variable. Moreover, it is reasonable to expect that high organisational density of the social partners and high levels of collective bargaining coverage, besides helping to reach process-oriented agreements, may also contribute to their impact.

Emerging questions for further research

Having identified the depth of sector demarcations in industrial relations within countries, a number of research questions emerge. Recently, comparative industrial relations have been increasingly concerned with the question of industrial relations outcomes; that is, in the effects that industrial relations arrangements have on economic, social and political realities. This question has been addressed at the aggregate national level and, in some cases, at the company level, but not yet at the sectoral level. The elaboration of industrial relations data at the sectoral level in a sufficiently large number of countries opens up a new field of comparative research.

The previous section discussed ESSD as an interesting example of possible effects of sector-level industrial relations. Other examples could be the degree of cross-border collective bargaining coordination, the organisation of European social partners, the implementation of inter-sector EU regulations or social dialogue agreements. In all these cases, the nature of the causal link requires, in addition to quantitative analysis, the historical and qualitative analysis of the specific developments. The sequencing of developments is particularly important, and the role of the various actors often needs to be investigated through interviews as documents are rarely sufficient. In this regard, an additional promising method is network analysis, which could reveal the extent of interactions between European-level, national-level and national sector-level actors. In turn, network analysis could identify which sector-level national actors are most connected, and therefore probably influential, in each European sector; subsequently, research could focus more on the industrial relations characteristics of those national sectors that appear to be most influential. For instance, it is likely that in the steel sector, social partners from specific countries are more influential at the European level than others; therefore, it will be interesting to study if their influence is related to certain sectoral-level industrial relations characteristics. This study could not distinguish the various countries in terms of their relative 'weight', and more focused investigation would be needed to achieve this.

Crucially, more qualitative research would allow us to control for the variety of different factors that interact with the sectoral ones discussed in this report. For example, legal frameworks, economic conditions, politicisation, existence of EU agencies, labour movement traditions, business networks, and competition with countries outside the EU all vary among sectors.

To systematically address some of these research questions, the elaboration of data from a larger number of sectors would be very important, ideally from a theoretically selected sample of sectors that differ in terms of the investigated dependent variable, such as the existence or not of an ESSD committee. Once a sample of at least 12 sectors has been reached, it would be possible to use research techniques such as qualitative comparative analysis and fuzzy sets to test which sector-level industrial relations characteristics are necessary, and which are not, to produce different outcomes (such as, again, the existence of a European social dialogue committee). In addition, more data (not available yet) on the sectoral level for each country would enable an econometric approach to test our hypotheses. The consideration of adjacent sectors (such as parts of the finance industry, or of metalworking) could also be very important, as in many cases European processes combine different national subsectors, and vice versa. The analysis could then relate intersectoral developments with the sectoral ones.

Such complex, multi-level questions require a major multi-method comparative research effort. Our study suggests that the knowledge gained could be enormously important for our understanding of European industrial relations. In particular, future research could test the important hypothesis emerging from our analysis: that the identified industrial relations configurations at sectoral level, and their similarity across countries, affect the capacity of cross-country coordination and regulation,

whether through collective bargaining or the development and implementation of European-level sectoral social dialogue. Social dialogue at the European sectoral level is frequently seen as weak because it is fragmentarily established across all sectors in the EU27. In Marginson's words, 'as such the European sector level represents a *weak link* [our italics] between the European cross-sector and company levels, and also between national systems and the European level' (Marginson, 2005, p. 512). Analytically, however, our study suggests the existence of a *strong* link, for the governance of the labour market, between the European and the national sector levels.

Conclusions 6

Variety of sectoral industrial relations

Our analysis of industrial relations characteristics in nine sectors and in the 27 EU Member States has provided systematic evidence for something that, while generally known, is often neglected or even forgotten in comparative industrial relations research. This is the existence of deep variation by sector. Countries are not as similar as prevailing ideas concerning 'model' suggest. While they may have visible national institutions and characteristics, and these tend to be rather path-dependent and resistant to change, the actual operation of those institutions may be very different sector by sector. Countries with fragmented trade unions at the national level may have just one or two large unions in a specific sector, and vice versa. Centralised collective bargaining in some sectors may coexist with decentralised collective bargaining in others, and so on. Our analysis reveals that sectoral variation (on five key industrial relations factors – see Box 2) is very high for almost all EU countries, except for the small group of Nordic countries, in addition to Austria, Malta and France, where national industrial relations structures are rather similar across all sectors (see Figure 1). This provides validation of the research hypothesis (H3) on the endurance and relevance of 'encompassing' national models, or at least some of them. In general, variation is high both for countries exposed to international competition and therefore more economically 'dependent', and countries that are more 'protected'. It is not therefore simply a product of globalisation, as the theory of 'converging divergences' suggests (Katz and Darbishire, 2000), but, we would argue, an inherent feature of industrial relations systems.

Moreover, our research shows that sectoral variation is not simply important, but even more important than national variation. In other words, to predict what sort of industrial relations regime a company, or a group of employees, are operating in, it is more important to look at what sector they work in, rather than in which country they are located. Moreover, some sectors display greater variation than others (Figure 3). In this regard, we do detect an effect of economic and institutional internationalisation. Those sectors (mostly in manufacturing and transport) that are characterised by transnational transferability of production, and/or by EU regulations, tend to be characterised by more similar industrial relations systems across countries, than those sectors (mostly in services) that are characterised by local markets and local customs and regulations. This finding provides validation of the hypotheses (1 and 2) on the different degrees of industrial relations similarity that sectors display. We can therefore argue that economic and institutional Europeanisation fosters, if not divergence between sectors, at least convergence within the Europeanised sectors. However, such convergence is not necessarily towards one single 'best way' type or model, but, rather, towards generally two, or even three, alternative ones.

Sectoral industrial relations types in the EU27

After having tested the degrees of variation, we looked more closely at the actual configuration of industrial relations at the sector level in each country. Given the high number of observations, sophisticated statistical analysis was necessary in the form of cluster analysis (Chapter 4). Such a method, like any classification attempt, involves a degree of simplification, but provides us with an intelligible picture of sectoral industrial relations.

The results of cluster analysis point at five distinct groups (clusters) of sectoral industrial relations configurations. We propose to define them as 'types', in a descriptive fashion, rather than 'models', as those terms would imply an internal coherence and rationality that would need to be more clearly demonstrated. Interestingly, these classes of sectoral industrial relations do not correspond exactly with the well-established typologies of national industrial relations systems. We define these five 'types' as:

- 'dense' (with some similarities to Nordic corporatism);
- 'political' (with some similarities to 'social partnership' central European countries);
- 'fragile' (with some similarities to western 'liberal' countries);
- 'lean' (with some similarities to corporatism);
- 'empty' (with some similarities to the 'transitional' industrial relations systems of some new EU Member States).

These different clusters do not generally overlap with the traditional geographic distinctions between central, Nordic, western, southern and eastern EU countries (for example, Visser, 2008). Only in the services sectors is some correspondence with such geographic distinctions visible, confirming that, in these sectors, national features are more relevant. Overall, our findings provide a useful, innovative analytical classification, which can be used to define sectoral industrial relations systems in each country and to avoid the mistake of assuming that they conform to national-level practices; they generally don't.

Variety of sectors and the ESSD

This study has looked at the relationship between ESSD output and sectoral differences and similarities of industrial relations across countries. Most of the literature on ESSD has focused on European and contextual factors (for example, economic). These may be important, but we were able to show that similar sectors, in terms of the systems of industrial relations within the sector, are more likely to develop effective ESSD, as measured by the capacity to agree about texts in general as well as on important process-oriented joint texts, and agreements (Pochet et al, 2009).

The test of the main hypotheses (H):

- **H1**: Is clearly **confirmed** as the analysis showed that sectors that are exposed to international competition are characterised by similar sectoral industrial relations systems.
- **H2:** It can be **confirmed** that sectors that are regulated at the European level are characterised by similar sectoral industrial relations systems. However, interdependencies between EU regulations and the internationalisation of sectors suggest that caution should be exercised when interpreting why this is the case.
- **H3:** The hypothesis that countries with 'encompassing' industrial relations are characterised by more similar sectoral industrial relations systems is **confirmed** only for 'Nordic' corporatist countries.

Implications of results

Given that each sector has its own specificities in terms of potential industrial relations coordination at EU level, understanding which sectors have a greater potential for such coordination requires the consideration not simply of EU-level factors (for example, the European social partners) and contextual factors, but also a closer scrutiny of sectoral industrial relations systems. This study proves that these matter for ESSD, and in this sense there is a 'strong link' between sector-specific industrial relations at the national level and EU sector developments. Unfortunately, with some important exceptions, comparative industrial relations studies have not yet provided systematic comparative analyses of

sectoral industrial relations. Our attempt provides some general conclusions, which may promote further analysis and research – in particular, on the role of the degree of sectoral similarity and its link to ESSD.

Further analysis would require both the production of more systematic comparative data on sectoral industrial relations (as through the EIRO representativeness reports), and the in-depth investigation of causal links and the actual operation of the different 'types' of sectoral industrial relations that this study has detected. Further in-depth studies could identify precise thresholds in industrial relations factors (dimensions) for the optimal efficacy of the ESSD. For instance, our findings hint at the possibility that a combination of some influential countries with strongly organised sectoral industrial relations, and other countries with more 'fragile' ones (but not 'disorganised') is conducive to the development of the ESSD. However, this argument would require testing (through more qualitative analysis) of the processes through which the European social partners reach common positions. Further quantitative analyses may provide more information about the effects of each specific feature of industrial relations (for example, organisational density, or collective bargaining centralisation). Our sectoral-level approach could also be applied to studies of sectoral economic performance at the EU level, in the same way as quantitative analyses have highlighted the link between industrial relations and economic performance at national level (see for example Traxler et al, 2001).

With special regard to the classification of industrial relations at the sectoral level, it would be advantageous to investigate sectors for which no sectoral committee has been established. An investigation of 'unregulated' sectors, both at the national and European levels, would enable the identification of stronger differences in the governance of labour markets throughout the EU27, and it would allow conclusions to be drawn about larger parts of the European labour market.

This study was able to describe and explain the industrial relations situation at the sectoral level in the EU at a specific time, in the mid-2000s. Longitudinal analysis would be needed to test whether the situation it portrays is evolving towards greater convergence or divergence. A longitudinal analysis is of special interest for many services sectors that are undergoing fundamental changes, such as becoming highly international through the medium of the Internet. Our study aims to provide the backbone for further research on the future directions of sectoral industrial relations which, considering the rapid changes in some sectors, is definitely needed.

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Annex 1:
Details on variables

Table A1: Description of variables and data sources

Variable and abbreviation	Explanation	Source
Organisational density (OD):		
Union density (UD)	Aggregate union density: the sum of all sectoral union members of all sector-related unions to the total number of sector employees; in percentage terms.	EIRO national centres***
Employer density (ED)	Aggregate employer associations' density: the ratio of the total number of employees working in companies of the sector that are a member of one of the sector-related employer associations; in percentage terms.	EIRO national centres***
Collective bargaining coverage (CBC)	Collective bargaining coverage: the ratio of the number of employees covered by any kind of collective agreement to the total number of employees in the sector; in percentage terms.	EIRO representativeness studies
Actor fragmentation (Fragmentation):		
Number of unions (# U)	Number of sector trade unions that are a member of sector-related European Union Federations.	EIRO representativeness studies
Number of employer associations (# E)	Number of sector employer associations that are members of the European Business Federation.	EIRO representativeness studies
Number of unions involved in collective bargaining (# U CB)	# U that participate in sector-related collective bargaining.	EIRO representativeness studies
Number of employer associations involved in collective bargaining (# E CB)	# E that participate in sector-related collective bargaining.	EIRO representativeness studies
Involvement in policy making (Involvement):		
Unions consulted (U Cons)	If trade unions are usually consulted by the authorities in sector-specific matters. Yes = 1; No = 0	EIRO representativeness studies
Employer associations consulted (E Cons)	If employer associations are usually consulted by authorities in sector-specific matters. Yes = 1; No = 0	EIRO representativeness studies
Tripartite boards (Boards)	Existence of tripartite bodies dealing with sector-specific issues. Yes = 1; No = 0	EIRO representativeness studies
Collective bargaining centralisation (Cent)	Centralisation of collective bargaining Sum of values of multi-employer bargaining at sector and inter-sector level, where: 0 = no multi-employer bargaining, 1 = multi-employer bargaining existing, but not important, 2 = important multi-employer bargaining, 3 = multi-employer bargaining as dominant bargaining level.	EIRO national centres***
Output of ESSD:		
Total texts	Number of documents/texts released between 1999 and 2007 by sectoral social dialogue committees (including: 'agreements', 'process-oriented texts', 'joint opinions and tools' and 'procedural texts')	Pochet et al (2009)
Process-oriented texts	If process-oriented texts can be found in a sector (Yes = 1; No = 0). Process-oriented texts contain clear provisions and a process to monitor implementation. Note that in this analysis category 'process-oriented texts' differs from the European Commission classification as it covers all texts that make explicit reference to a monitoring process.	Pochet et al (2009)

Variable and abbreviation	Explanation	Source
Output of ESSD:		
Agreements	Agreement council decisions: Binding agreements (whether or not implemented through European directives) which must be followed up and monitored, since they are based on Article 155 of the Lisbon Treaty.	Social Dialogue text database**
Sectoral similarity	Similarity of industrial relations across EU27 countries. Construction of the measure is explained in Chapter 2. Please note that the lower the measure is the higher the similarity.	
Transferability	Transnational transferability of production locations in sector	See Table 1 for categorisation
Regulated	Sectors in which the product market is regulated by the European Commission via various legislations.	European Commission / Enterprise and Industry*
Multinationals	Presence of large, transnationally active firms (firm size relative to size of the national sector)	See Table 1 for categorisation
Company size	Average company size (number of employees in sector/number of companies in sector)	EIRO representativeness studies
Total Labour Force (LF)	Total labour force in a country	AMECO database
Employment share	Number of employees in sector/total number of employees in country	AMECO database

Notes: Data refers to years 2004 to 2007.
* European Commission / Enterprise and Industry: http://ec.europa.eu/enterprise/policies/.
**European Commission Social Dialogue texts database.
***Data provided by the EIRO national centres (on basis of a standardised questionnaire survey).

Missing data

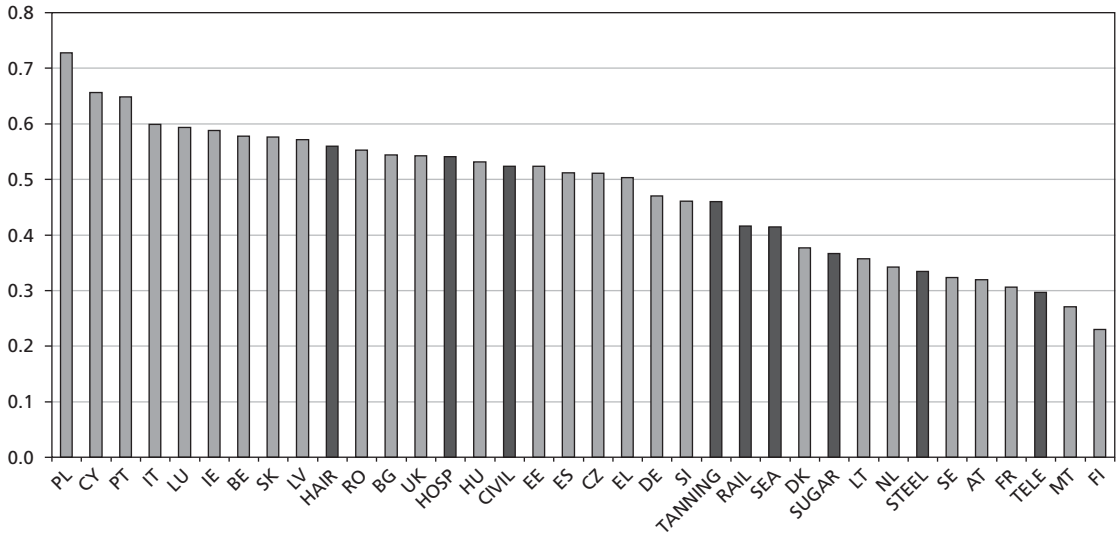
Some industrial relations variables for some countries/sectors are not considered in the analysis (specifically in the similarity measure, cluster analysis and regression analysis) because of missing data: Steel: IE, PL; Sugar: CY, EE, IE, LU, MT, PL, EL; Tanning and leather: IE, LU, EE, PL; Civil aviation: NL, PL; Railway infrastructure: CY, MT, EL; Sea and coastal water transport: HU, SK, NL, PL; Hospitals: PL; Hairdressing and other beauty treatments: MT; Telecommunication: CY, EL, IE.

For a detailed list of the missing data see sectoral reports from Eurofound's European Industrial Relations Observatory (EIRO).

Missing data are not distributed systematically across sectors and countries so that any distorting bias of any results is very unlikely.

Annex 2:
Varieties of industrial relations systems across sectors and countries (ranking)

Figure A1: Comparison of the degree of variance of industrial relations systems between EU27 countries and sectors



Notes: Scores for countries show the average normalised standard deviation of the five key industrial relations factors for countries calculated across sectors. Scores for sectors show the average normalised standard deviation of the five key industrial relations factors for sectors calculated across countries. For both, the higher the score the higher the variation in industrial relations. Abbreviation of sectors: Steel (STEEL), sugar (SUGAR), tanning and leather (TANNING), civil aviation (CIVIL), railway infrastructure (RAIL), sea and coastal water transport (SEA), hospitals (HOSP), hairdressing and other beauty treatments (HAIR), telecommunications (TELE). See Chapter 2 for the composition of the similarity measure and for missing data see Table A1 in Annex 1.

Annex 3: Configurational industrial relations characteristics of clusters/types

Table A2: Characteristics of types (clusters, models)

	Organisational density			CBC	Actor fragmentation					Involvement in policy making				Cent
	OS	UD	ED	CBC	Frag-mentation	# U	# E	# U CB	# E CB	Involve-ment	# U Cons	# E Cons	Boards	Cent
Type 1: (*N* = 51)														
Mean	68.51%	61.38%	75.63%	80.94%	3	5	2	4	1	3	4	1	1	2
Median	69%	61.20%	83%	95%	3	4	1	3	1	3	3	1	1	3
Stddev.	18.94%	26.88%	26.79%	27.29%	1.5	3	1	3	1	0.5	3	1	0.5	1
Type 2: (*N* = 66)														
Mean	59.42%	51.77%	67.08%	95.46%	3	5	2	5	1	1.5	3	1	0	3
Median	67.58%	55.50%	89%	100%	2	3	1	3	1	1.5	2	1	0	3
Stddev.	27.74%	30.48%	38.93%	10.70%	2	4	1.5	4	1	1	4	1	0.5	1
Type 3: (*N* = 30)														
Mean	68.89%	58.12%	79.66%	87.83%	3	5	2	4	2	0	0	0	0	3
Median	71.23%	59.50%	84.35%	100%	3	4	1	4	1	0	0	0	0	3
Stddev.	16.88%	25.94%	21.03%	18.88%	1.5	3	1	3	1	0	0	0	0	1
Type 4: (*N* = 31)														
Mean	51.20%	57.20%	44.47%	86.18%	2	4	1	3	0	1	1	0	0	0
Median	44.20%	60%	52%	95%	1	3	0.5	3	0.5	1	0	0	0	0
Stddev.	27.66%	32.69%	40.48%	15.19%	1.5	3.5	1	3	0.5	0.5	1	0	0	0.5
Type 5: (*N* = 38)														
Mean	21.71%	19.49%	23.94%	19.27%	1	2	0.5	2	0	1	1	0	0	0
Median	12.70%	5.12%	1.50%	15.40%	1	1	0	1	0	1	1	0	0	0
Stddev.	21.22%	24.78%	34.08%	20.83%	1	2.5	0.5	3	0	1	1	0	0	1

Notes: N = number of cases (sector/country); Stddev. = standard deviation; For abbreviations of variables see Table A1 in Annex 1.

Table A3: Characteristics of the steel sector and types/clusters of the steel sector

	Organisational density			CBC	Actor fragmentation					Involvement in policy making				Cent
	OS	UD	ED	CBC	Frag-mentation	# U	# E	# U CB	# E CB	Involve-ment	# U Cons	# E Cons	Boards	Cent
Type 1: (*N* = 8) AT, CZ, FI, HU, IT, LU, NL, ES														
Mean	65.58%	52.70%	78.46%	90.84%	2.5	3	2	3.5	1.5	2.5	3	1	1	2
Median	64.03%	44.90%	89.35%	100%	2.5	3	1	3	1	3	3	1	1	2
Stddev.	18.65%	24.26%	33.82%	15.68%	1.5	2	2	2	2.5	0.5	2	2	0.5	1
Type 2: (*N* = 8) BE, DK, EE, DE, EL, LV, RO, SE														
Mean	63.92%	60.90%	66.94%	97.38%	2	3	1.5	3	1	2	2	1	0	3
Median	77.75%	69%	76.50%	100%	2	2	1	2	1	2	1.5	1	0	3
Stddev.	34.04%	34.58%	36.51%	5.29%	1	2	1	2	0.5	0.5	2.5	0.5	0.5	1
Type 3: (*N* = 4) FR, PT, SK, SI														
Mean	65.78%	60.38%	71.18%	95%	3	5	2	5	1.5	0	0	0	0	4
Median	71.13%	59.50%	79%	95%	3	5	1.5	4.5	1	0	0	0	0	4
Stddev.	14.44%	17.42%	29.08%	5.77%	1	2	1	2	0.5	0	0	0	0	1
Type 4: (*N* = 4) BG, CY, MT, UK														
Mean	65.31%	79.45%	51.18%	80.95%	1	2	1	2	0.5	0.5	0	0	0.5	0.5
Median	58.53%	80%	52.35%	83%	1	2	1	2	0.5	0.5	0	0	1	0
Stddev.	25.08%	23.75%	45.29%	22.25%	0.5	1	0.5	1	0.5	0.5	0	0	0.5	1
Type 5: (*N* = 1) LT														
Mean	57.50%	25%	90%	25%	1.5	2	1	2	0	0	0	0	0	0
Median	57.50%	25%	90%	25%	1	2	1	2	0	0	0	0	0	0
Stddev.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Steel sector: (*N* = 25)														
Mean	64.71%	59.72%	69.70%	89.38%	2.5	3	1.5	3	1	1.5	1.5	1	0.5	2
Median	67.05%	58%	80.70%	100%	2	3	1	3	1	2	1	1	0	2
Stddev.	23.39%	27.59%	34.46%	18.91%	1	2	1.5	2	1.5	1	2	1.5	0.5	1

Notes: N = number of cases (sector/country); Stddev. = standard deviation; for abbreviations of variables see Table A1 in Annex 1.

Table A4: Characteristics of the sugar sector and types/clusters of the sugar sector

	Organisational density			CBC	Actor fragmentation					Involvement in policy making				Cent
	OS	UD	ED	CBC	Frag-mentation	# U	# E	# U CB	# E CB	Involve-ment	# U Cons	# E Cons	Boards	Cent
Type 1: (*N* = 3) HU, IT, RO														
Mean	79.02%	62.04%	96%	100%	1.5	2	1	2	1	3	2	1	1	2
Median	87.50%	80.83%	100%	100%	2	2	1	2	1	3	2	1	1	2
Stddev.	17.27%	38.01%	6.93%	0%	0.5	1	0	1	0	0	1	0	0	0.5
Type 2: (*N* = 8) AT, BE, DK, FI, FR, NL, SI, ES														
Mean	74.81%	55.39%	94.23%	100%	2	3	1.5	3	1	1.5	2.5	0.5	0	3
Median	75.50%	56.25%	100%	100%	2	3	1	3	1	2	1.5	1	0	3
Stddev.	15.27%	28.87%	8.07%	0%	1	1.5	1	1.5	0.5	0.5	2	0.5	0.5	1
Type 3: (*N* = 3) DE, SK, SE														
Mean	83.88%	67.77%	100%	100%	1.5	2	1	2	1	0	0	0	0	3
Median	77.50%	55%	100%	100%	1	1	1	1	1	0	0	0	0	4
Stddev.	13.05%	26.11%	0%	0%	1	1.5	0	1.5	0	0	0	0	0	1
Type 4: (*N* = 4) BG, LV, LT, PT														
Mean	37.43%	33.85%	41%	84.68%	1.5	2.5	1	1.5	0.5	1	0.5	0.5	0	0.5
Median	31.25%	30.50%	32%	87.35%	1	1.5	1	1.5	0	1	0	1	0	0
Stddev.	37.35%	31.80%	49.57%	18.23%	1	2.5	0.5	0.5	0.5	0.5	0.5	0.5	0	1
Type 5: (*N* = 2) CZ, UK														
Mean	8.63%	17.25%	0%	31%	1	2	0.5	2	0	0	0	0	0	0
Median	8.63%	17.25%	0%	31%	1	2	0.5	2	0	0	0	0	0	0
Stddev.	2.51%	5.02%	0%	9.90%	0.5	1.5	0.5	1.5	0	0	0	-	0	0
Sugar sector: (*N* = 20)														
Mean	62.71%	50.12%	75.29%	90.04%	1.5	2.5	1	2.5	0.5	1.5	1.5	0.5	0	2
Median	74.38%	52.75%	100%	100%	1.5	2	1	2	1	1	1	1	0	2
Stddev.	31.19%	30.74%	39.70%	22.44%	1	1.5	0.5	1.5	0.5	1	1.5	0.5	0.5	1.5

Notes: *N* = number of cases (sector/country); Stddev. = standard deviation; for abbreviations of variables see Table A1 in Annex 1.

Table A5: Characteristics of the tanning and leather sector and types/clusters of the tanning and leather sector

	Organisational density			CBC	Actor fragmentation					Involvement in policy making				Cent
	OS	UD	ED	CBC	Frag-mentation	# U	# E	# U CB	# E CB	Involve-ment	# U Cons	# E Cons	Boards	Cent
Type 1: (*N* = 1) UK														
Mean	45.68%	44.56%	46.79%	50%	2	3	2	1	1	3	3	2	1	2
Median	45.68%	44.56%	46.79%	50%	2	3	2	1	1	3	3	2	1	2
Stddev.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Type 2: (*N* = 8) AT, FI, DE, EL, IT, NL, RO, SE														
Mean	55.91%	39.82%	71.99%	96.88%	2	2	1.5	2	1.5	2	1	1.5	0.5	3
Median	58.25%	25.62%	68.85%	100%	1.5	2	2	2	1	2	1	1	0	3
Stddev.	20.14%	28.95%	24.66%	7.04%	1	1.5	0.5	1.5	0.5	0.5	1	0.5	0.5	0.5
Type 3: (*N* = 6) BE, DK, FR, PT, SI, ES														
Mean	59%	45.67%	72.33%	93.75%	2	3.5	1	3	1	0	0.5	0.5	0	4
Median	57%	47%	78%	100%	2	3.5	1	2.5	1	0	0	0	0	4
Stddev.	19.53%	27.61%	25.48%	15.31%	1	2	0.5	2	0.5	0.5	1	0.5	0	1
Type 4: (*N* = 2) BG, CY														
Mean	59.70%	50%	69.40%	100%	1	2	0.5	2	0.5	0	0	0	0	0
Median	59.70%	50%	69.40%	100%	1	2	0.5	2	0.5	0	0	0	0	0
Stddev.	56.99%	70.71%	43.27%	0%	0.5	0	0.5	0	0.5	0	0	0	0	0
Type 5: (*N* = 6) CZ, HU, LV, LT, MT, SK														
Mean	21.63%	17.17%	26.10%	14.33%	0.5	1	0.5	0.5	0	1	0.5	0.5	0	1
Median	16.65%	0%	6.40%	0%	0.5	1	0	0.5	0	1	0.5	0	0	0
Stddev.	22.89%	40.60%	37.61%	24.67%	0.5	0.5	1	0.5	0.5	1	0.5	0.5	0	1
Tanning and leather sector: (*N* = 23)														
Mean	47.66%	36.53%	58.79%	72.76%	1.5	2	1	2	1	1	0.5	1	0	2
Median	46.50%	26.23%	62%	100%	1.5	2	1	1	1	1	0	1	0	3
Stddev.	27.21%	34.50%	34.19%	39.51%	1	1.5	1	1.5	0.5	1	1	1	0.5	2

Notes: *N* = number of cases (sector/country), for *N* = 1 no standard deviations can be reported; Stddev. = standard deviation; for abbreviations of variables see Table A1 in Annex 1.

Table A6: Characteristics of the civil aviation sector and types/clusters of the civil aviation sector

	Organisational density			CBC	Actor fragmentation					Involvement in policy making				Cent
	OS	UD	ED	CBC	Frag-mentation	# U	# E	# U CB	# E CB	Involve-ment	# U Cons	# E Cons	Boards	Cent
Type 1: (*N* = 8) AT, BE, BG, FI, DE, EL, IE, UK														
Mean	65.99%	69.27%	62.72%	88.63%	3.5	6	1.5	5.5	1.5	2.5	4.5	1	0.5	1
Median	64.80%	64.92%	69.28%	95%	3	5	1	5	1	2	4	1	0.5	2
Stddev.	20.69%	21.66%	34.83%	14.86%	1.5	2	1	2.5	1	0.5	2.5	1	0.5	1
Type 2: (*N* = 6) FR, IT, RO, SI, ES, SE														
Mean	61.62%	49.73%	73.50%	98%	7	11	2	11	2.5	1.5	4	2	0	4
Median	68.75%	50%	90%	100%	7	11.5	2	11	2	2	3	1	0	4
Stddev.	29.90%	33.18%	37.55%	4%	1.5	3	1.5	2.5	1.5	1	5	2	0.5	1
Type 3: (*N* = 2) DK, HU														
Mean	81.23%	77.25%	85.20%	77%	7	13	0.5	13	0.5	0	0	0	0	2.5
Median	81.23%	77.25%	85.20%	77%	7	13	0.5	13	0.5	0	0	0	0	3
Stddev.	12.41%	18.03%	6.79%	25.46%	2	4	0.5	4	0.5	0	0	0	0	1
Type 4: (*N* = 6) CY, CZ, LT, LU, MT, PT														
Mean	47.46%	57.51%	37.42%	89.67%	3	7	0	6	0	0.5	0.5	0	0	0
Median	46.33%	53.89%	30.75%	95%	3	5.5	0	5.5	0	0	0	0	0	0
Stddev.	21.37%	26.67%	41.84%	12.42%	1.54	3	0	3.31	0	0.5	1	0	0.5	0
Type 5: (*N* = 3) EE, LV, SK														
Mean	20.60%	37.80%	3.40%	43.67%	1	1.5	0	1.5	0	1.5	1	0	0.5	0
Median	16.50%	33%	0%	48%	0.5	1	0	1	0	1	1	0	0	0
Stddev.	11.70%	17.70%	5.89%	9.29%	0.5	1	0	1	0	0.5	0	0	0.5	0.5
Civil aviation sector: (*N* = 25)														
Mean	56.27%	58.62%	53.91%	84.80%	4	7.5	1	7	1	1.5	2.5	1	0.5	2
Median	59%	61.20%	63.56%	95%	3	6	1	6	1	2	1	0	0	1
Stddev.	26.33%	26.36%	40.09%	20.12%	2.5	4	1.5	4	1.5	1	3	1	0.5	2

Notes: *N* = number of cases (sector/country); Stddev. = standard deviation; for abbreviations of variables see Table A1 in Annex 1.

Table A7: Characteristics of the railway infrastructure sector and types/clusters of the railway infrastructure sector

	Organisational density			CBC	Actor fragmentation					Involvement in policy making				Cent
	OS	UD	ED	CBC	Frag-mentation	# U	# E	# U CB	# E CB	Involve-ment	# U Cons	# E Cons	Boards	Cent
Type 1: (*N* = 2) IT, PL														
Mean	88.75%	77.50%	100%	100%	6	11.5	1	11.5	1	3	11.5	1	1	3
Median	88.75%	77.50%	100%	100%	6	11.5	1	11.5	1	3	11.5	1	1	3
Stddev.	1.77%	3.54%	0%	0%	4	8	0	8	0	0	8	0	0	0
Type 2: (*N* = 12) AT, BE, FI, DE, HU, IE, LV, LU, NL, RO, SI, ES														
Mean	61.65%	66.43%	56.88%	94.55%	2	3.5	0.5	3	0.5	1	3	0.5	0	3
Median	65.25%	68.50%	89.25%	100%	2	3	0	3	0	1	2.5	0	0	3
Stddev.	26.59%	25.08%	49.75%	11.52%	1	2.5	0.5	2.5	0.5	0.5	2.5	0.5	0	1
Type 3: (*N* = 3) DK, FR, SE														
Mean	68.27%	50.87%	85.67%	100%	3.5	6	2	5	2	0	0	0	0	4
Median	57.50%	51.60%	95%	100%	3.5	7	2	5	2	0	0	0	0	4
Stddev.	19.26%	35.51%	20.65%	0%	1	2.5	2	3	2	0	0	0	0	0.5
Type 4: (*N* = 7) BG, CZ, EE, LT, PT, SK, UK														
Mean	56.99%	63.13%	50.86%	90.46%	2.5	5.5	0	5.5	0	0.5	1.5	0	0	0
Median	47%	72%	62%	97.50%	1.5	3	0	3	0	1	2	0	0	0
Stddev.	27.50%	25.51%	49.29%	14.46%	3	6.5	0	6.5	0	0.5	1.5	0	0	0
Type 5: (*N* = 0)														
Mean	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Median	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stddev.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Railway infrastructure sector: (*N* = 24)														
Mean	63.38%	64.44%	62.31%	94.49%	2.5	5	0.5	4.5	0.5	1	3	0	0	2
Median	66.25%	71%	94.50%	100%	2	3.5	0	3	0	1	2	0	0	3
Stddev.	25.31%	24.95%	45.87%	11.38%	2	4.5	1	4.5	1	1	4	0.5	0	2

Notes: *N* = number of cases (sector/country); Stddev. = standard deviation; for abbreviations of variables see Table A1 in Annex 1.

Table A8: Characteristics of the sea and coastal water transport sector and types/clusters of the sea and coastal water transport sector

	Organisational density			CBC	Actor fragmentation					Involvement in policy making				Cent
	OS	UD	ED	CBC	Frag-mentation	# U	# E	# U CB	# E CB	Involve-ment	# U Cons	# E Cons	Boards	Cent
Type 1: (*N* = 13) BG, CY, FI, FR, DE, EL, IT, IE, LT, PT, RO, SI, SE														
Mean	73.91%	72.15%	75.66%	66.38%	3	4	2	3.5	1	2.5	3	1.5	0.5	3
Median	75.60%	80.85%	85%	75%	3	3	2	3	1	3	2	1	1	3
Stddev.	17.22%	25.40%	29.49%	33.97%	1	2	1	2	1	0.5	2	1	0.5	1
Type 2: (*N* = 4) AT, BE, DK, LV														
Mean	79.56%	89%	70.13%	92.50%	2	3	1.5	3	1	1	1	0.5	0	3
Median	91.88%	93.50%	90.25%	95%	2	2.5	1	2.5	1	1	1	1	0	3
Stddev.	30.32%	13.74%	47.01%	9.57%	1.5	2	1	2	1	0.5	1.5	0.5	0.5	1
Type 3: (*N* = 0)														
Mean	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Median	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stddev.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Type 4: (*N* = 1) MT														
Mean	87.30%	87.30%	-	55%	1	2	1	2	0	1	2	-	0	0
Median	87.30%	87.30%	-	55%	1	2	1	2	0	1	2	-	0	0
Stddev.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Type 5: (*N* = 5) CZ, EE, LU, ES, UK														
Mean	41.30%	31.44%	51.16%	26.36%	2	3	1	3	0.5	2	2.5	1	0	0
Median	50%	35%	65%	27%	2	3	1	3	0	2	3	1	0	0
Stddev.	24.66%	25.87%	43.74%	21.16%	1	2	1	2	0.5	0.5	1	0.5	0	0
Sea and coastal water transport sector: (*N* = 23)														
Mean	68.38%	66.89%	69.09%	61.73%	2	3.5	1.5	3	1	2	3	1	0.5	2
Median	72.50%	69%	82.50%	55%	2	3	1	3	1	2	2	1	0	3
Stddev.	24.93%	30.15%	35.78%	34.57%	1	2	1	2	1	1	2	1	0.5	1.5

Notes: *N* = number of cases (sector/country), for *N* = 1 no standard deviations can be reported; Stddev. = standard deviation; for abbreviations of variables see Table A1 in Annex 1.

Table A9: Characteristics of the hospitals sector and types/clusters of the hospitals sector

	Organisational density			CBC	Actor fragmentation					Involvement in policy making				Cent
	OS	UD	ED	CBC	Frag-mentation	# U	# E	# U CB	# E CB	Involve-ment	# U Cons	# E Cons	Boards	Cent
Type 1: (*N* = 8) EE, FI, FR, DE, IE, LV, SK, UK														
Mean	69.96%	62.22%	77.69%	78.25%	4	6	2	6	2	3	5	1.5	1	3
Median	67.30%	73%	81.75%	90%	4.5	6	2	6	2	3	4.5	1	1	3
Stddev.	14.71%	28.07%	15.16%	27.33%	2	3.5	1	3.5	1	0.5	4	1	0.5	0.5
Type 2: (*N* = 11) AT, BE, BG, DK, IT, LU, NL, PT, RO, SI, ES														
Mean	56.28%	46.97%	65.58%	98.09%	5	7.5	2	7.5	2	1.5	7	2	0	3
Median	71.57%	45%	99.07%	100%	3	5	1	5	1	2	5	1	0	3
Stddev.	31.13%	25.50%	47.42%	4.50%	3.5	6	2.5	6	2.5	0.5	6	3	0.5	1
Type 3: (*N* = 3) CY, EL, SE														
Mean	82.60%	77.86%	87.33%	62.83%	4.5	7	2	6	2	0	0	0	0	3
Median	80.45%	74.19%	88%	66%	4	7	2	7	2	0	0	0	0	3
Stddev.	3.90%	7.87%	13.01%	31.37%	1	2.5	1.5	4.5	1.5	0	0	0	0	1
Type 4: (*N* = 2) CZ, MT														
Mean	36.23%	60.40%	0%	84.50%	2	3.5	0.5	3.5	0	0.5	2	0	0	0
Median	36.23%	60.40%	0%	84.50%	2	3.5	0.5	3.5	0	0.5	2	0	0	0
Stddev.	17.15%	51.34%	-	14.85%	0.18	1	0.5	0.5	0	0.5	3	0	0	0
Type 5: (*N* = 2) HU, LT														
Mean	40.53%	42.70%	38.35%	15%	2.5	5	0	5	0	0.5	3	0	0	1.5
Median	40.53%	42.70%	38.35%	15%	2.5	5	0	5	0	0.5	3	0	0	2
Stddev.	16.30%	21.64%	54.24%	10.61%	1	1.5	0	1.5	0	0.5	4	0	0	2
Hospitals sector: (*N* = 24)														
Mean	60.77%	55.93%	67.26%	80.48%	4	6.5	2	6	2	1.5	5	1	0	3
Median	67.30%	62.25%	83%	95%	3	5	1	5	1	2	3	1	0	3
Stddev.	25.41%	27.04%	38.56%	28.79%	2.5	4.5	2	4.5	2	1	5	2	0.5	1

Notes: N = number of cases (sector/country); Stddev. = standard deviation; for abbreviations of variables see Table A1 in Annex 1.

Table A10: Characteristics of the hairdressing and other beauty treatments sector and types/clusters of the hairdressing and other beauty treatments sector

	Organisational density			CBC	Actor fragmentation					Involvement in policy making				Cent
	OS	UD	ED	CBC	Frag-mentation	# U	# E	# U CB	# E CB	Involve-ment	# U Cons	# E Cons	Boards	Cent
Type 1: (*N* = 2) FI, IE														
Mean	59.58%	45.15%	74%	50.50%	2	2	1.5	2	1.5	3	1.5	1.5	1	3.5
Median	59.58%	45.15%	74%	50.50%	2	2	2	2	2	3	1.5	1.5	1	4
Stddev.	44.65%	62.44%	26.87%	70%	1	1.5	0.5	1.5	0.5	0	1	1	0	1
Type 2: (*N* = 6) AT, FR, DE, IT, PT, SE														
Mean	36.08%	14.35%	57.81%	84.50%	2.5	2.5	2.5	2	2	2	1	2	0	4
Median	39.21%	11.46%	57.45%	100%	2	3	2	2	2	2	1	2	0	4
Stddev.	13.84%	11.16%	26.05%	24.36%	1	1.5	2	1.5	1.5	1	1	2	0.5	1
Type 3: (*N* = 4) BE, DK, NL, SI														
Mean	58.88%	44.25%	73.50%	91.25%	3	2.5	3	2.5	3	0	0	0	0	3.5
Median	61%	47.50%	76.50%	92.50%	2	3	3	3	3	0	0	0	0	3
Stddev.	16.67%	29.81%	24.34%	10.31%	1	1	1	1	1.5	0	0	0	0	1
Type 4: (*N* = 1) ES														
Mean	13.50%	3%	24%	100%	3.5	3	4	3	4	0	0	0	0	0
Median	13.50%	3%	24%	100%	3.5	3	4	3	4	0	0	0	0	0
Stddev.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Type 5: (*N* = 13) BG, CY, CZ, EE, EL, HU, LV, LT, LU, PL, RO, SK, UK														
Mean	10.20%	2.62%	17.77%	4.85%	0	0.5	0.5	0	0	0	0	0	0	0
Median	0.75%	0%	0%	0%	0	0	0	0	0	0	0	0	0	0
Stddev.	18.09%	6.97%	30.95%	17.47%	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0	1
Hairdressing and other beauty treatments sector: (*N* = 26)														
Mean	27.58%	15.02%	40.15%	43.69%	1	1.5	1.5	1	1	1	0.5	1	0	2
Median	20.25%	3%	32%	24%	1	1	1	1	1	0	0	0	0	2
Stddev.	27.01%	24.62%	36.20%	46.38%	1.5	1.5	1.5	1.5	1.5	1	1	1	0.5	2

Notes: *N* = number of cases (sector/country), for *N* = 1 no standard deviations can be reported; Stddev. = standard deviation; for abbreviations of variables see Table A1 in Annex 1.

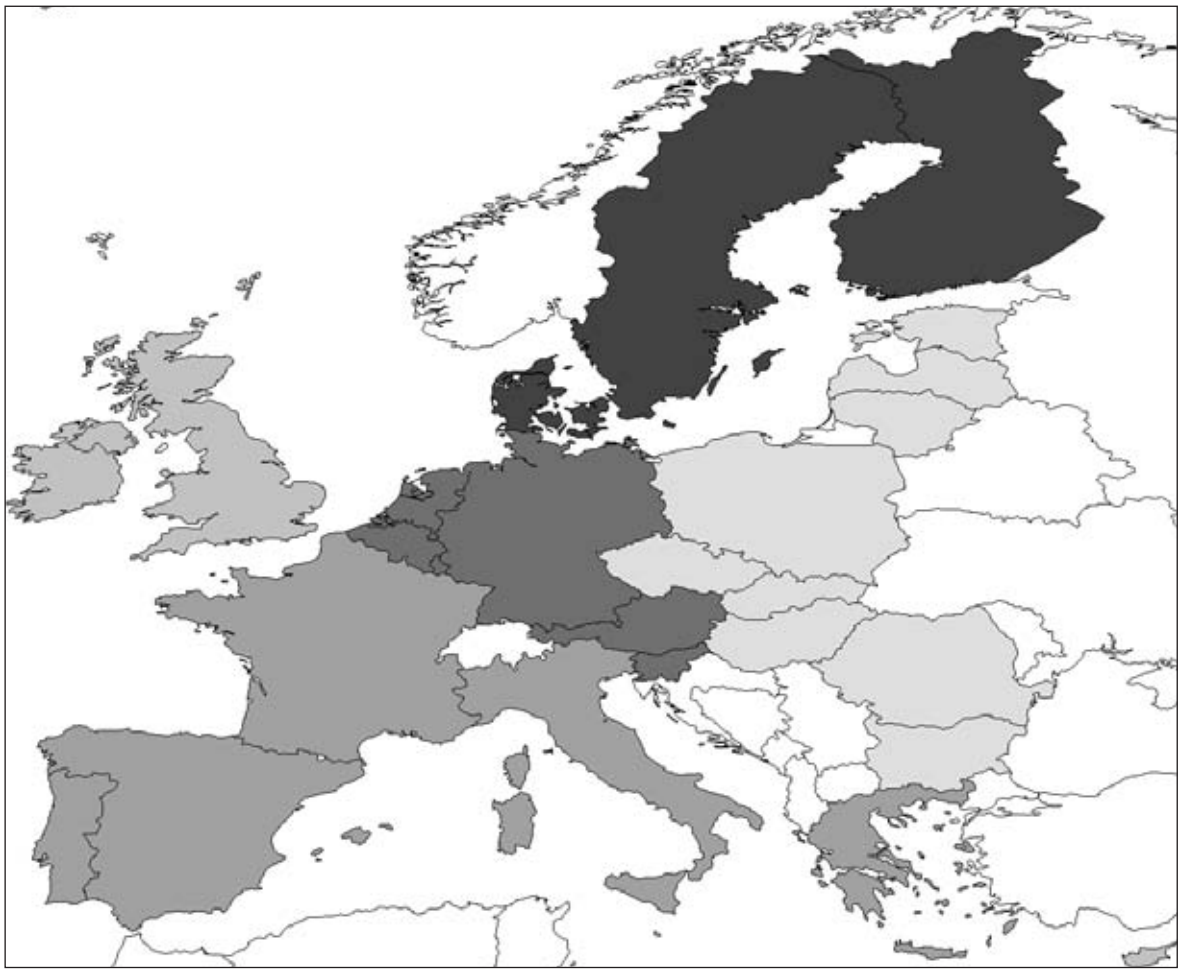
Table A11: Characteristics of the telecommunications sector and types/clusters of the telecommunications sector

	Organisational density			CBC	Actor fragmentation					Involvement in policy making				Cent
	OS	UD	ED	CBC	Frag-mentation	# U	# E	# U CB	# E CB	Involve-ment	# U Cons	# E Cons	Boards	Cent
Type 1: (*N* = 6) AT, DK, NL, RO, SK, ES														
Mean	56.89%	40.47%	73.32%	92%	3	4.5	1	4.5	1	2	3	1	0.5	1.5
Median	49.18%	32.50%	69.95%	95%	2.5	4	1	4	1	2	2.5	1	1	2
Stddev.	18.29%	20.54%	18.92%	10.56%	1	2.5	0.5	2.5	0.5	0.5	2	0.5	0.5	1
Type 2: (*N* = 3) BE, FR, HU														
Mean	33.88%	37.77%	30%	89.17%	3	5	1	5	1	0	0	0	0	3
Median	17.50%	35%	0%	100%	4	7	1	7	1	0	0	0	0	4
Stddev.	35.85%	20.99%	51.96%	18.76%	2	3	1	3	1	0.5	0	0	0.5	1
Type 3: (*N* = 5) FI, IT, PL, SI, SE														
Mean	69.47%	61.40%	77.54%	77%	3	4	1	4	1	0	0	0	0	4
Median	70%	55%	80.70%	90%	3	4	1	4	1	0	0	0	0	3
Stddev.	16.25%	30.32%	20.32%	22.80%	0.5	1.5	1	1.5	1	0	0	0	0	1
Type 4: (*N* = 4) EE, DE, LT, MT														
Mean	49.94%	55.50%	44.38%	78.50%	1	2.5	0.5	3	0	1	2	0	0	0
Median	42.25%	49%	56.75%	78.50%	1	2.5	0	2.5	0	1	1	0	0	0
Stddev.	20.91%	35.86%	30.03%	5.45%	1	2	1	1.5	0	0.5	2	0	0	0
Type 5: (*N* = 6) BG, CZ, LV, LU, PT, UK														
Mean	23.12%	31.35%	14.88%	33.92%	2	5	0	4.5	0	1	2.5	0	0	0.5
Median	19.09%	24.79%	7.15%	34.75%	1	3	0	2	0	1	2	0	0	0
Stddev.	15.16%	23.21%	19.14%	11.48%	2.5	5	0.5	5	0.45	0.5	1	0.5	0	1
Telecommunications sector: (*N* = 24)														
Mean	47.03%	44.72%	49.35%	71.75%	2	4	1	4	0.5	1	2	0	0	2
Median	45.25%	35%	56.75%	78.50%	2	4	1	4	0.5	1	1	0	0	2
Stddev.	25.41%	26.70%	35.60%	26.68%	1.5	3	0.5	3	0.5	1	1.5	0.5	0.5	2

Notes: N = number of cases (sector/country); Stddev. = standard deviation; for abbreviations of variables see Table A1 in Annex 1.

Annex 4:
Spatial allocation of industrial relations system types in the EU27

Figure A2: Spatial allocation of 'traditional' industrial relations types/models



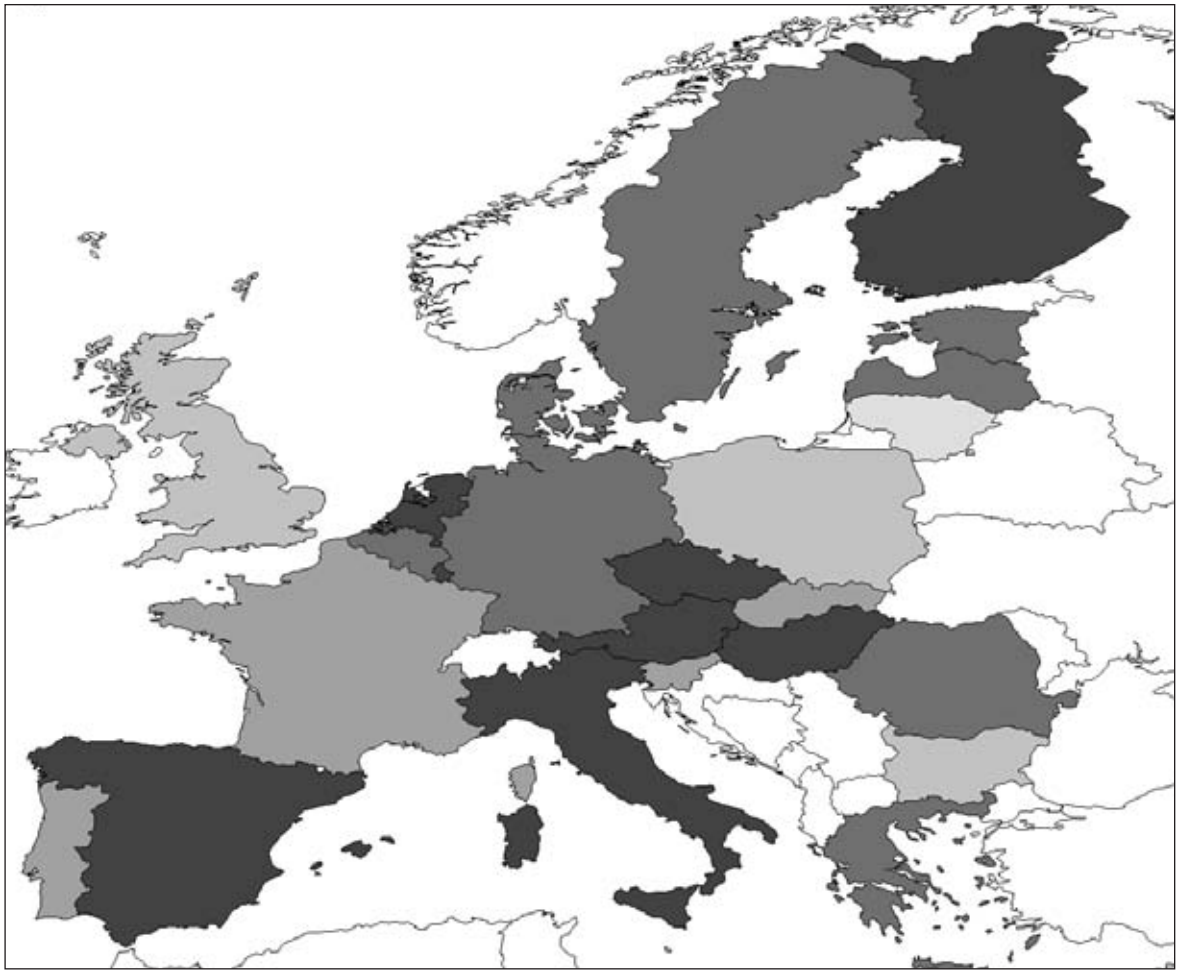
Notes:

n.a.
Model 5
Model 4
Model 3
Model 2
Model 1

The models are based on the categorisation of Visser (2008, p. 51).

Model 1 = North (organised corporatism), Model 2 = Centre (social partnership), Model 3 = South (state-centred), Model 4 = West (liberal), Model 5 = Transit (mixed).

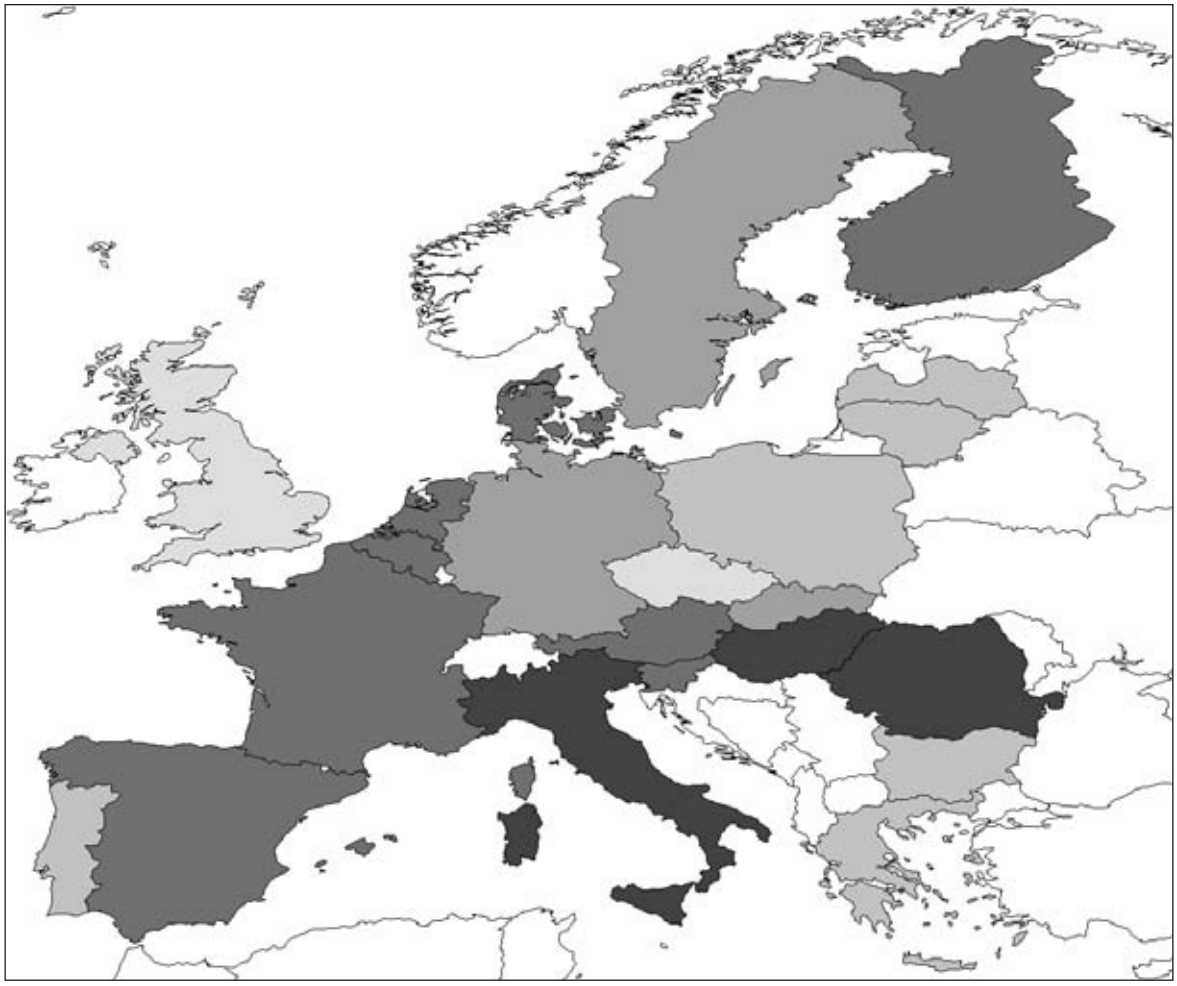
Figure A3: Spatial allocation of industrial relations system types in the steel sector



Notes: For the description of the configurational characteristics of types/clusters see Table 3 and Table 7 in Annex 3.

Type 1 = 'Dense', Type 2 = 'Political', Type 3 = 'Lean', Type 4 = 'Fragile', Type 5 = 'Empty'.

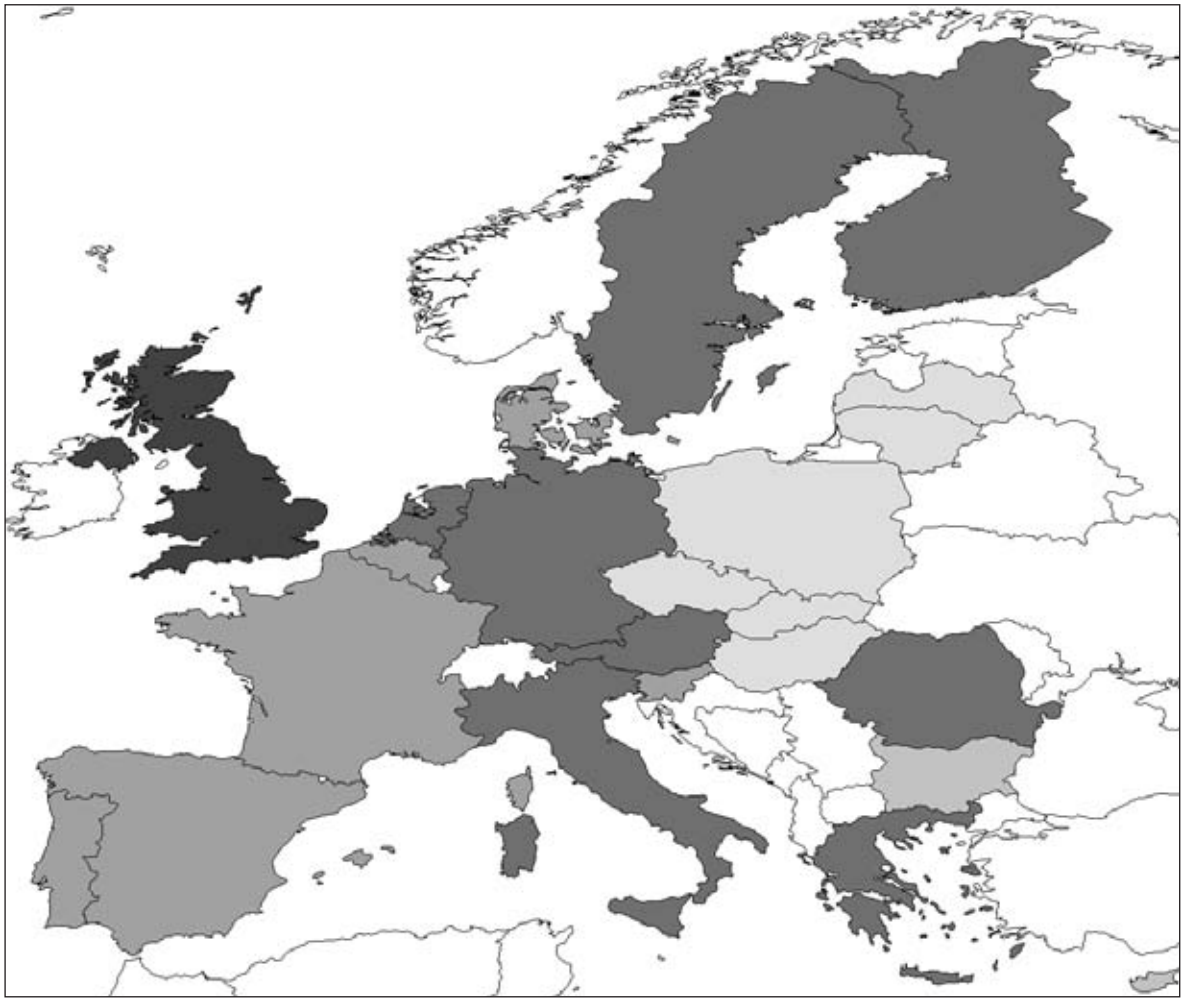
Figure A4: Spatial allocation of industrial relations system types in the sugar sector



Notes: For the description of the configurational characteristics of types/clusters see Table 3 and Table 7 in Annex 3.

Type 1 = 'Dense', Type 2 = 'Political', Type 3 = 'Lean', Type 4 = 'Fragile', Type 5 = 'Empty'.

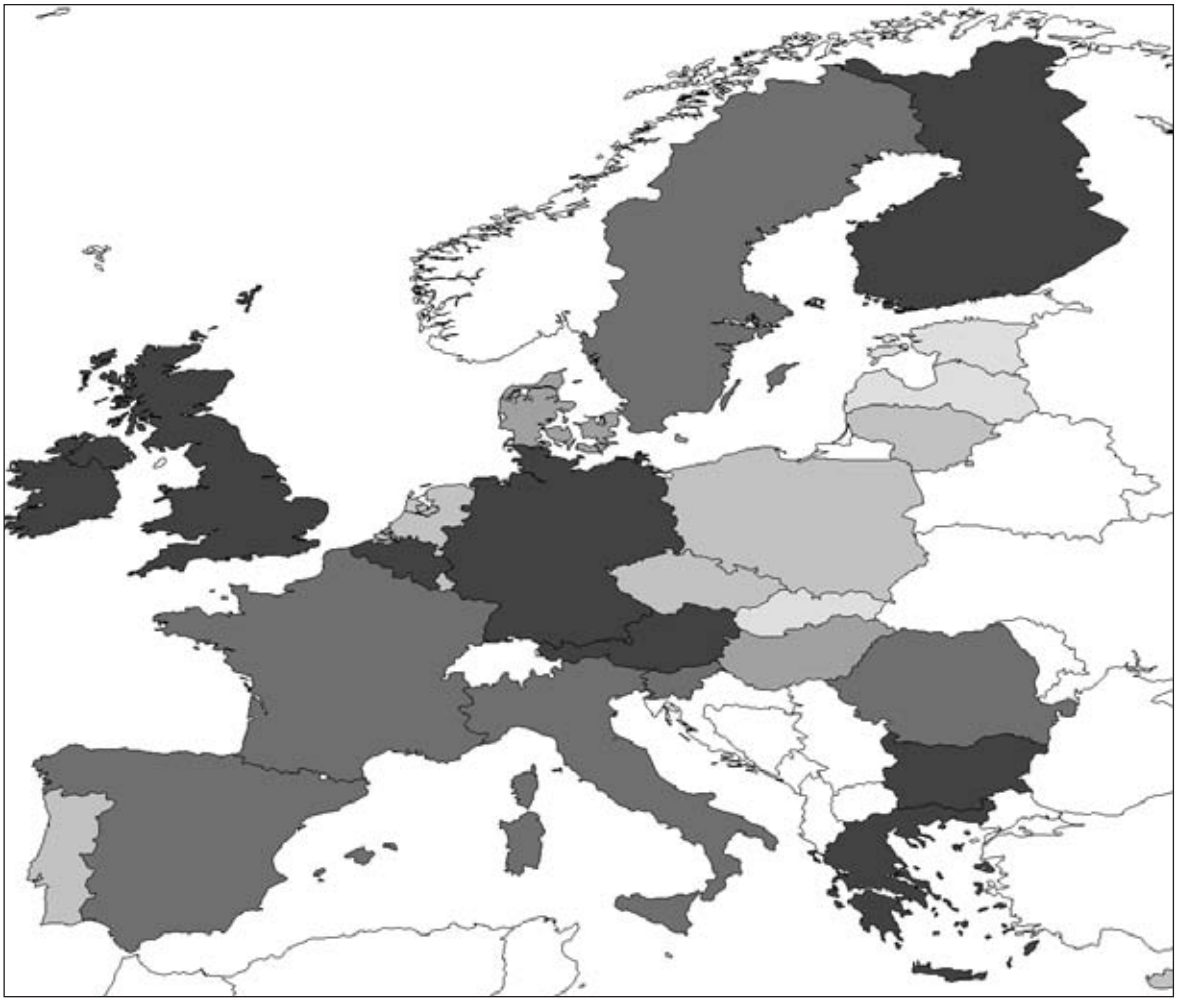
Figure A5: Spatial allocation of industrial relations system types in the tanning and leather sector



Notes: For the description of the configurational characteristics of types/clusters see Table 3 and Table 7 in Annex 3.

Type 1 = 'Dense', Type 2 = 'Political', Type 3 = 'Lean', Type 4 = 'Fragile', Type 5 = 'Empty'.

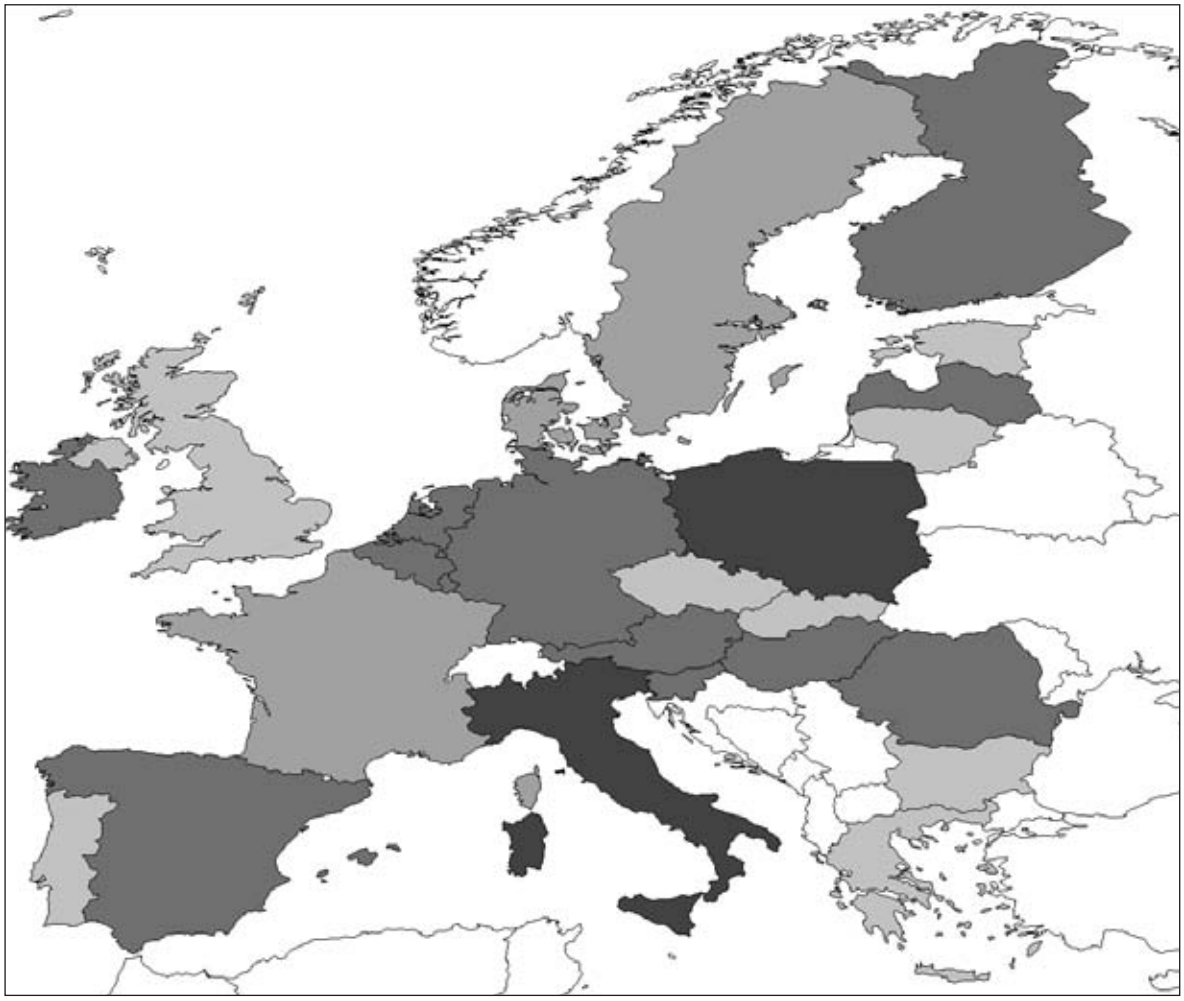
Figure A6: Spatial allocation of industrial relations system types in the civil aviation sector



Notes: For the description of the configurational characteristics of types/clusters see Table 3 and Table 7 in Annex 3.

Type 1 = 'Dense', Type 2 = 'Political', Type 3 = 'Lean', Type 4 = 'Fragile', Type 5 = 'Empty'.

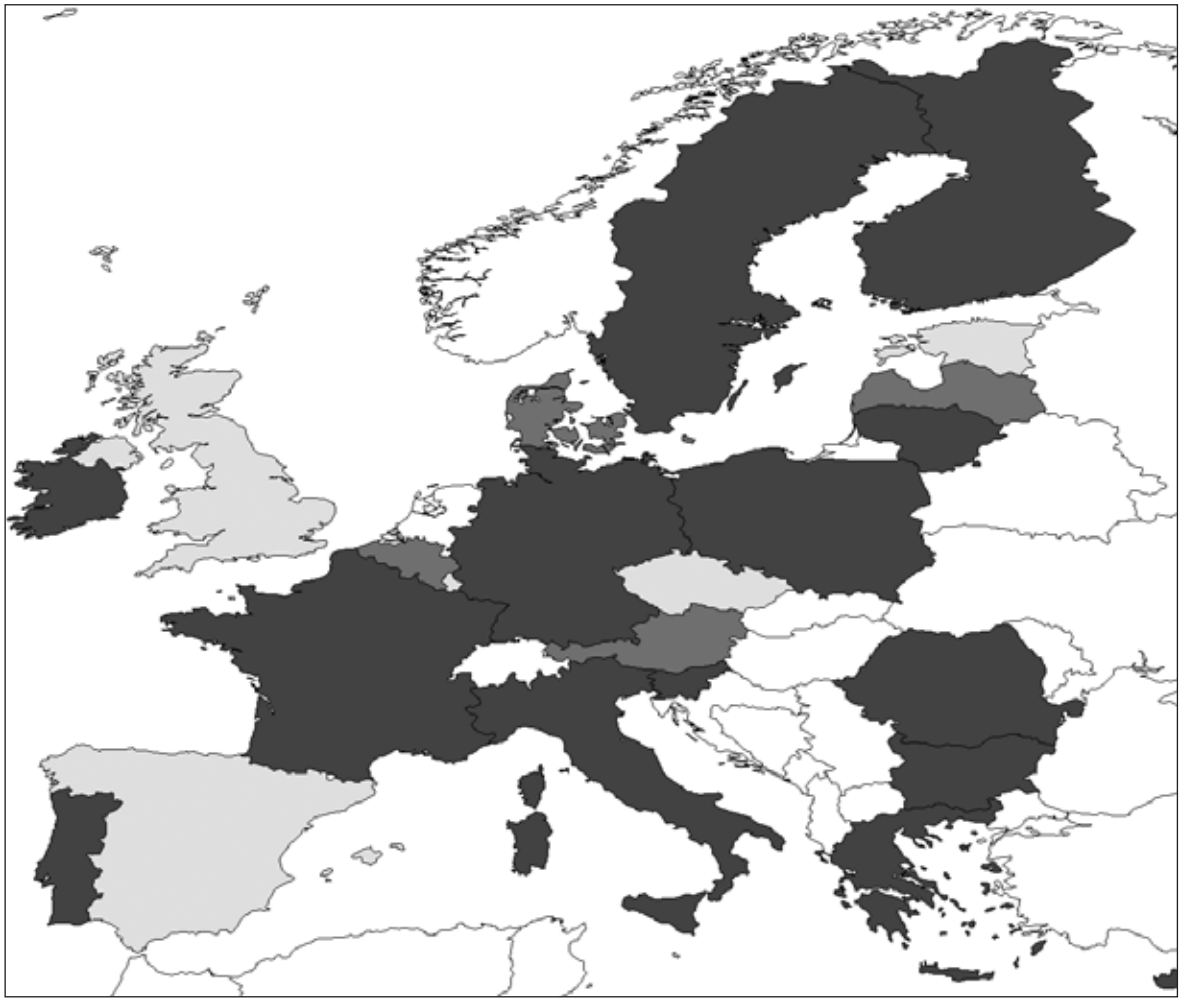
Figure A7: Spatial allocation of industrial relations system types in the railway infrastructure sector



Notes: For the description of the configurational characteristics of types/clusters see Table 3 and Table 7 in Annex 3.

Type 1 = 'Dense', Type 2 = 'Political', Type 3 = 'Lean', Type 4 = 'Fragile', Type 5 = 'Empty'.

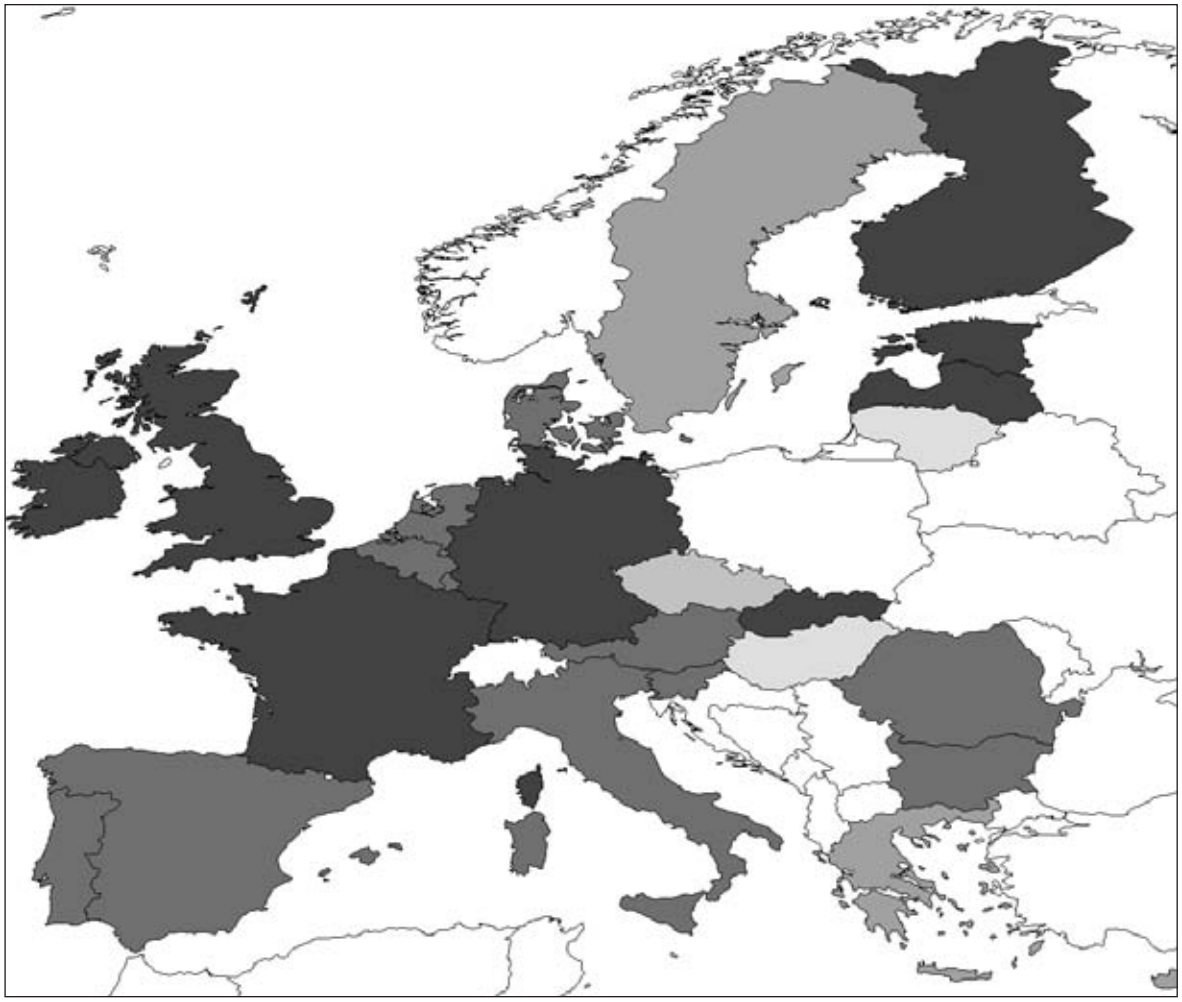
Figure A8: Spatial allocation of industrial relations system types in the sea and coastal water transport sector



Notes: For the description of the configurational characteristics of types/clusters see Table 3 and Table 7 in Annex 3.

Type 1 = 'Dense', Type 2 = 'Political', Type 3 = 'Lean', Type 4 = 'Fragile', Type 5 = 'Empty'.

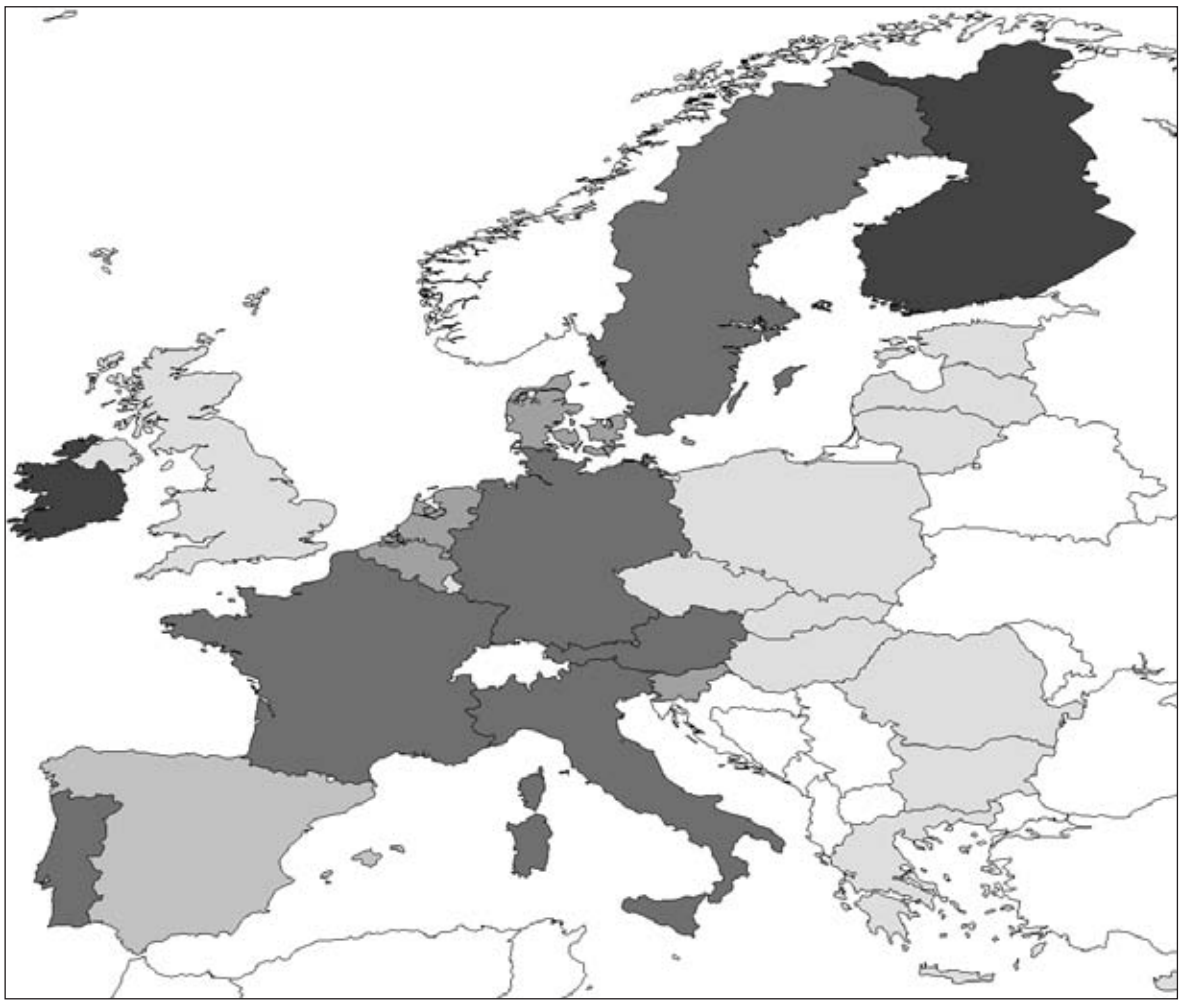
Figure A9: Spatial allocation of industrial relations system types in the hospitals sector



Notes: For the description of the configurational characteristics of types/clusters see Table 3 and Table 7 in Annex 3.

Type 1 = 'Dense', Type 2 = 'Political', Type 3 = 'Lean', Type 4 = 'Fragile', Type 5 = 'Empty'.

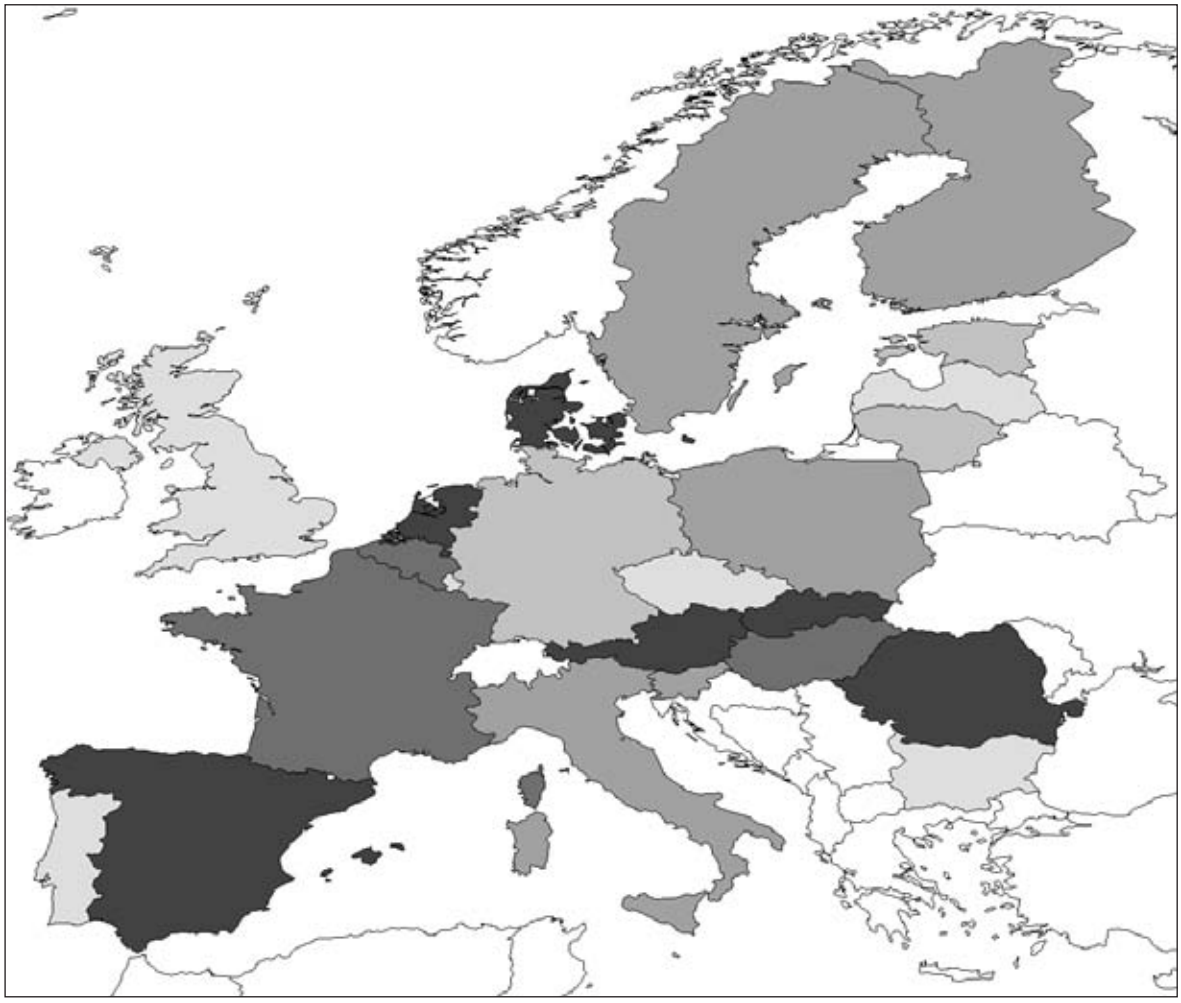
Figure A10: Spatial allocation of industrial relations system types in the hairdressing and other beauty treatments sector



Notes: For the description of the configurational characteristics of types/clusters see Table 3 and Table 7 in Annex 3.

Type 1 = 'Dense', Type 2 = 'Political', Type 3 = 'Lean', Type 4 = 'Fragile', Type 5 = 'Empty'.

Figure A11: Spatial allocation of industrial relations system types in the telecommunications sector



Notes: For the description of the configurational characteristics of types/clusters see Table 3 and Table 7 in Annex 3.

Type 1 = 'Dense', Type 2 = 'Political', Type 3 = 'Lean', Type 4 = 'Fragile', Type 5 = 'Empty'.

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Industrial relations have been studied at a national level for more than 100 years. This study, however, shows for the first time that industrial relations vary more by sector than by country. The authors also argue that this sector-focused research can provide a far more detailed picture of European industrial relations than purely national definitions allow.

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